Virginia Wildlife

SEPTEMBER
1961
VOLUME XXII
NUMBER 9
20 CENTS

Virginia Wildlife

Dedicated to the Conservation of Virginia's Wildlife and Related Natural Resources and to the Betterment of Outdoor Recreation in Virginia

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, *Richmond 13, Virginia*

PUBLICATION OFFICE: Commission of Game and Inland Fisheries, 7 North Second St., Richmond 13, Va.

M. RUPERT CUTLER . . . . . *Editor*
GEORGE H. HARRISON . . . . . *Associate Editor*
LEON G. KESTELOO . . . . . *Photographer*
FLORENCE B. WADE . . . . . *Circulation*

SEPTEMBER

Volume XXII / Number 9

IN THIS ISSUE **PAGE**

COVER: Big, noisy and conspicuous, the American oyster-catcher is seldom found far from the wilder, outer beaches of the Atlantic coast, where it feeds on oysters, mussels, clams, and other shellfish. Protected by law, it breeds from New Jersey south to central Argentina. Our cover artist: Bob Hines of Arlington, Virginia.

SUBSCRIPTIONS: One year, $1.50; three years, $3.50. Give check or money order, made payable to the Treasurer of Virginia, to local game warden or send to Commission of Game and Inland Fisheries, P. O. Box 1642, Richmond 13, Virginia.

VIRGINIA WILDLIFE is published monthly at Richmond 13, Virginia, by the Commission of Game and Inland Fisheries, 7 North Second Street. All magazine subscriptions, change of address notices, and inquiries should be sent to Box 1642, Richmond. The editorial office gratefully receives for publication news items, articles, photographs, and sketches of good quality which deal with Virginia's soils, water, forests, and wildlife. The Commission assumes no responsibility for unsolicited manuscripts and illustrative material. Credit is given on material published. Permission to reprint text material is granted provided credit is given the Virginia Commission of Game and Inland Fisheries and VIRGINIA WILDLIFE. Clearances must be made with photographers or artists to reproduce illustrations.

Second-class postage paid at Richmond, Va.

EDITORIAL

But What of the Future?

SPORTSMEN in Virginia are well off right now. The wildlife resource here is in good shape.

Yes, there are local problems. The cottontail population in Southside dropped sharply last fall, apparently hit by disease. Clean farming methods have served to reduce bobwhite numbers in some sections of the State. New roads into the national forests and Dismal Swamp and the use of more dog packs each year may mean trouble for the State's black bears. Overcrowding and a lack of hunting pressure stemming from restrictive regulations are resulting in annual winter die-offs of two valuable if unrelated species in the marshes and swamps of the Tidewater, the snow geese and the white-tailed deer. Our remnant elk herd in Giles County may be passing out of the picture as the habitat changes. Massive doses of pollution have destroyed game fish and waterfowl in Hampton Roads, the Shenandoah River and other waters.

Yet the general situation is good. We're sure that white-tailed deer are more abundant today than ever before in the history of the Old Dominion. Except where landowners have eliminated all protective cover, cottontail rabbits, bobwhite quail and gray squirrels are still abundantly available. Ruffed grouse will never be "shot out" of their brushy mountainside coverts, and the State's wild turkey population, profiting from the protection of mature hardwood stands, is making an impressive, if temporary, comeback. An enlightened public and a dedicated corps of law enforcement men have reduced the unlawful taking of game and fish. The acquisition by the Commission of Game and Inland Fisheries of large tracts of wild land in a long-range effort to make sure that there will always be public hunting in Virginia is continuing. And biologists are pointing the way for fish and game to be harvested on a sustained yield basis.

Our satisfaction with the present gives us no excuse to forget our obligation to future generations, however. If we believe in our hearts that wilderness and outdoor recreation are essential and that life without them would be a sorry form of existence, let's support the efforts of those working to instill in our young people a love of the natural scene and an appreciation of that priceless re-creation of men's minds and bodies which hunting, fishing and other forms of outdoor experience provide. This means encouraging the youth group leaders—teachers, scoutmasters, and 4-H and Future Farmers of America advisors—who incorporate and emphasize natural resource conservation projects in their programs, and urging other leaders to do likewise.

How can we expect teachers and other leaders to preach the conservation gospel when most of them have little knowledge of modern resource management theories and techniques? We can't, but we can help them gain this knowledge by seeing that they know about and have scholarships to the conservation short courses designed primarily for teachers which have been held at three Virginia colleges each summer since 1956 under the auspices of the Virginia Resource-Use Education Council (Box 1642, Richmond).

And how can teachers most easily emphasize wildlife conservation in their classrooms during the school year about to get underway? They can see that their schools are registered in the 15th Annual Wildlife Essay Contest. As taxpayers and interested parents, we, too, can encourage principals to enter their schools in this Board of Education-approved contest which is co-sponsored by the Game Commission and the Virginia Division of the Izaak Walton League. Once

(Continued on Page 9)

LETTERS

Fan Mail

YESTERDAY I had the opportunity for the first time of seeing your VIRGINIA WILDLIFE magazine. I think this magazine is outstanding. In my opinion, it belongs in the same class as the NATIONAL GEOGRAPHIC. In the June issue there were three items that I thought were outstanding: (1) The front cover; (2) the pictures of Virginia wild flowers; and (3) the editorial entitled "Just One Day a Year."

Donald G. Wilbar
Arlington, Virginia

Walton Project Interests KAB

WE are very interested in reprinting the feature "Albemarle Saves a Trout Stream," as it appeared in the April 1961 issue of VIRGINIA WILDLIFE.

Keep America Beautiful, Inc., aims at the preservation and improvement of America's scenic beauty, both rural and urban, through a continuing program of public education and awareness to stimulate individual responsibility and pride in clean, safe and attractive surroundings. KAB is guided by an advisory council that includes representatives of the U. S. Department of Commerce, Agriculture, Interior and Health, Education and Welfare, and 55 national public interest organizations.

We are particularly aware of conservation activities at this time since we are currently working on a conservation and outdoor recreation guide. Present plans call for distribution in the early fall through the national conservation and sportsmen organizations represented on the KAB National Advisory Council.

Jeanne Pennie
Special Projects
Keep America Beautiful, Inc.
New York, New York

South Dakota Heard From

I HAVE been receiving your fine magazine through the courtesy of one of your Virginia gentlemen who was in South Dakota hunting our pheasants. You are to be congratulated on your very fine magazine.

Kenneth Waterfall
Watertown, South Dakota

Covers Used In Classroom

I FIND VIRGINIA WILDLIFE very useful in my fourth grade classroom work. I have dozens of the cover pictures mounted and use them all during the year. My only regret is that the magazine title is placed in such a way as to detract from these veritable works of art. Would it be possible to spread the magazine name across the top or very bottom of the cover?

Mrs. Andrew J. Witten
Tazewell, Virginia

All we can suggest, Mrs. Witten, is that you trim the name off covers such as this month's and place them against a white background, or "crop" the picture to a smaller size. The June warbler cover, for example, can easily be trimmed to a smaller size for framing. Reprints of the cardinal and pileated woodpecker covers without the magazine name are available on request.

A Progress Report--

The Control of Boating by States

By COMMANDER W. R. SAYER
U. S. Coast Guard Headquarters
Washington, D. C.

ON September 2, 1958, President Eisenhower signed the Federal Boating Act into law. The legislative activity in the various states which followed the enactment of this federal law is almost unprecedented. To date 40 states have established motorboat identification numbering systems prescribed in that Act.

History of the Federal Act

The long history of regulatory maritime laws shows that they were often enacted as an aftermath of a marine disaster. Frequently they were what might properly be termed "panic legislation." But, contrary to history, the Federal Boating Act of 1958 was based upon a recognition of a continuously mounting problem, a thorough inquiry into the facts, and calm deliberation upon what was best to do. The Merchant Marine and Fisheries Committee of the House of Representatives, under the chairmanship of Congressman Herbert C. Bonner of North Carolina, conducted hearings not only in Washington but throughout the nation, visiting 16 cities, and compiling a 1600-page record which is filled with suggestions and recommendations from many whose opinions on boating merit respect.

During the hearings by the Bonner committee, one fact became especially clear: There was an absence of reliable statistics on boating and boating accidents. In this absence of facts the committee refused to go off "half cocked"; they refused to legislate in a vacuum. The proponents of this law never did, and do not now, claim that it was the ultimate in boating legislation. They subscribe to the probability that other boating laws may be necessary, but their objective was to provide some solution to boating safety problems, the existence of which could not be doubted. For that reason, the Federal Boating Act has essentially three principal objectives: one, the identification of motorboats through a nationally uniform system of numbering; two, accident prevention through the gathering and study of accident reports, and three, the highest possible degree of cooperation between the state and federal governments.

Federal-State Cooperation

Section 9 of the Federal Boating Act declares the policy of Congress to be (1) to encourage uniformity of laws, rules and regulations among the several states and the federal government to the fullest extent practicable; (2) to foster the development, use and enjoyment of all the waters of the the United States; (3) to encourage the highest degree of reciprocity and agreeable relations among the several jurisdictions, and (4) to insure the fullest cooperation in the enforcement of both state and federal statutes, rules and regulations relating to recreational boating.

That was the Congressional aim. Its achievement rests largely upon the good will and good intentions of the several legislatures, upon the persistence and efficiency of the officials in state and federal government having these objectives in mind, and upon the continued understanding and support of other organizations striving toward the maximum in recreational boating and water safety.

To date all the uniformity which Congress hoped for has not been achieved, but efforts in that direction are continuing. Much credit is due the work of the Council of State Governments, the contributions of information and ideas circulated by the Outboard Boating Club of America, and the Advisory Panel of State Officials to the Coast Guard Merchant Marine Council, through which the Coast Guard is informed and advised by those officials from different areas of the country whose job it is to enact, administer, or enforce the state laws pertaining to boating.

It was under the auspices of this advisory panel that two national conferences have thus far been held. Every state was invited; even Hawaii and Puerto Rico have been represented. Out of these national meetings have come associations of state officials organized on a regional basis to consider those problems relating to boating which are peculiar to their particular area.

Misconceptions of the Federal Act

The Federal Boating Act did not extend nor diminish the jurisdiction of the Coast Guard. We are still responsible for enforcing the federal laws upon the navigable waters of the United States. Our jurisdiction *has not* been extended to include lakes and non-navigable streams which are exclusively within the state jurisdiction and on which federal

Fast becoming the most important "first step" for outboarders is the Coast Guard Auxiliary's Courtesy Safety Inspection. A purely voluntary action, the inspection assures the owner that his craft is properly equipped for a safe boating season.

Mercury Outboard Motors Photo

Adapted from an address delivered at the 11th Annual Meeting, National Water Safety Congress, St. Paul, Minnesota, June 12, 1961.

Commission Photo by Kesteloo

The Federal Boating Act did not extend nor diminish the jurisdiction of the Coast Guard. The men of the Little Machipongo Coast Guard Station (above) help boaters on Virginia's Eastern Shore.

Commission Photo by Harrison

Lakes and non-navigable streams exclusively within state jurisdictions are patrolled by state personnel. In Virginia, the state game wardens (shown at a boat law instruction class) also enforce the boat laws.

laws are not applicable. There are, however, some waters within the territorial boundaries of the states over which concurrent jurisdiction—state and federal—does exist. On these waters the passage of a state law has not relieved us of our responsibility for law enforcement nor for the investigation of marine casualties.

We do *not* approve state laws. The approval required by the Federal Boating Act before a state may assume the numbering functions extends to the numbering system only and not to the state law which enables the establishment of that system. That state law may contain provisions regarding the operation and equipment of boats which are not in complete agreement with federal law or regulations. Such provisions would not apply to nor be enforceable upon the navigable waters of the United States which are within that state, but they would be perfectly valid and enforceable upon waters over which the state has complete control. The point I wish to emphasize here is that Coast Guard approval is limited to the numbering *system* only, and our approval is mandatory if the *system* meets the essentials prescribed in in the Federal Boating Act.

Scope of State Laws

In addition to numbering, most state laws contain provisions regarding reckless operation, incapacity of operator, water skiing, speed regulations, restricted areas, and rules of the road. There are some laws which also provide for horsepower limitations, licensing of operators, prohibit water pollution, establish civil liability, and endeavor to prevent over-powering and overloading by requiring the passenger capacity and maximum horsepower to be clearly indicated somewhere on the boat.

Practically every state law contemplates some program of public education in boating safety. New York has been outstanding in this field, and has established one which includes the instruction of school children in boating safety as an extracurricular activity, encouraged with the cooperation of the State Department of Public Education. Much time, talent and money is being utilized throughout the nation in state programs of water safety. There is a great variety of educational material made available to the boat owner and operator. Exhibits at boat shows and lectures by law enforcement officers have augmented this educational program.

If there is one common fault which most seriously affects the efficiency of any state program, it is the failure of the legislature to provide sufficient money, either through direct appropriations or fixing the numbering fee realistically, to enable the state agency burdened with the job to do it creditably. They send a boy on a man's errand. In one state I recently visited, the numbering fee is $1.00 for two years. That isn't enough to cover the simple operation of printing the forms, screening the application, preparing the certificate and taking care of the mailing costs, to say nothing of the expense of voluminous correspondence, the maintenance of files, the assembly of statistical data, plus the educational and law enforcement programs which the situation demands. Under this state system a livery operator can obtain a separate number for each of his boats upon payment of a total fee of $1.00 regardless of the number of boats involved. In one instance an operator numbered almost 100 boats. The sheriff who accepted the application received almost $25.00 for his services (based on the statutory fee of 25 cents each) but the state agency had to do all the paper work and absorb the mailing costs of all those certificates and could only collect one dollar.

What further complicates their financial troubles is that many of these commissions operate largely on hunting and fishing license receipts, with additional funds provided by the federal government under the Dingell-Johnson and the Pittman-Robertson laws. These laws prohibit any of this money so received from being used in any activity not directly related to fish and wildlife. These commissions, although burdened with the responsibility for assuming the boating program, cannot afford to jeopardize their principal source of income. All their operations relating to boating are limited to whatever is possible with boat receipts only.

I believe that a vast majority of boat owners would favor a higher state fee if they are satisfied that results beneficial to boating would follow. There is an old cliche about purchasing anything: "Quality lingers long after price is forgotten." If the product of any state boating program can be recognized and shows an earnest effort to meet the needs of boat owners, they will soon endorse the program and forget the fee. No fee is small enough to excuse a poor program.

Inquire into the income your state agency must operate with, and if it is inadequate for the job you think needs doing, do something about it between now and the next session of your legislature. See if at least a part of the tax on gasoline consumed by boats can be assigned to this program. Look into the disposition of fines imposed for violations of boating laws, and see if there is any reason why that money cannot also be applied to these costs.

Three E's of Safety

Much has been said in the past about the famous three E's of safety—Engineering, Education, and Enforcement. State law can do relatively little about engineering. That is a problem which rests largely upon the boating industry, assisted by the Coast Guard and certain non-profit testing laboratories (such as the Yacht Safety Bureau) in the de-

velopment of recognized and accepted standards for the manufacture and use of boats and equipment.

The states and the federal government are all trying desperately to cultivate public safety mindedness and reduce the frequency and severity of boating accidents. All are using radio and TV. publicity at boat shows, distribution of safety pamphlets, and every other conceivable method of passing the word. But look at the record. Out of every 100 newcomers to boating, not more than 10 avail themselves of instruction in boat handling and boating safety, which the Power Squadron and the Coast Guard Auxiliary will give them free. In 1960 the Coast Guard Auxiliary examined almost 110,000 boats and over 37,000 failed. The records of our boarding teams show that approximately 25 percent of all boats boarded were not equipped as required by laws designed for the safety of the persons aboard. The record of the Bonner committee hearings contains a report of a special survey made of those boats in a particular area which failed to pass the Auxiliary courtesy examination. That survey disclosed that almost 10 percent of those to whom hazardous conditions were pointed out never corrected them and, in two instances, explosions occurred on board boats

Coast Guard Photo

Classes in boat handling and boat safety are offered all interested citizens by Power Squadrons and Coast Guard Auxiliary flotillas. Coast Guard Commander Anthony Caliendo is shown addressing the graduates of a class conducted by Flotillas 21 and 22 of Washington, D. C.

which the Auxiliary had predicted would occur unless the condition was corrected. But the correction was not made and one death resulted. Apparently education is not the complete answer.

The greatest contribution which any state can make toward increased safety afloat is the enforcement of its laws designed for safety. The Coast Guard cannot meet the mounting needs for effective, vigorous law enforcement in all boating areas.

The improvement in outboard motors, boat trailers and roads, the increase in water acreage in all parts of the country by the building of power and reclamation projects, and the fact that people in every economic strata have now more time for recreation than ever before have caused boating to become a major activity in every state, whereas it was once largely confined to the seacoasts and the regions of large rivers. The full import of this situation and the impossibility of effective enforcement without state participation has become clearly evident.

The states have the potential for a vigorous, effective enforcement program. Enforcement is now the big "E" in safety which needs attention. It is the one where the greatest improvement can be made with the least delay. Engineering and education take time. But an improvement in enforcement could be started tomorrow, and I honestly believe that the boating public will then have increased respect for our state boating laws and for those whose job it is to see that these laws are obeyed.

Virginia's Landlocked Striped Bass

By ROBERT J. DOMROSE
District Fish Biologist
Lynchburg, Virginia

WITHIN the past five years, a new species of fresh water game fish has become familiar to thousands of Virginia fishermen. The striped bass, or rock *(Roccus saxatilis)*, originally a salt water fish which spawns in fresh water, has adapted successfully to life in Buggs

Photo by the author

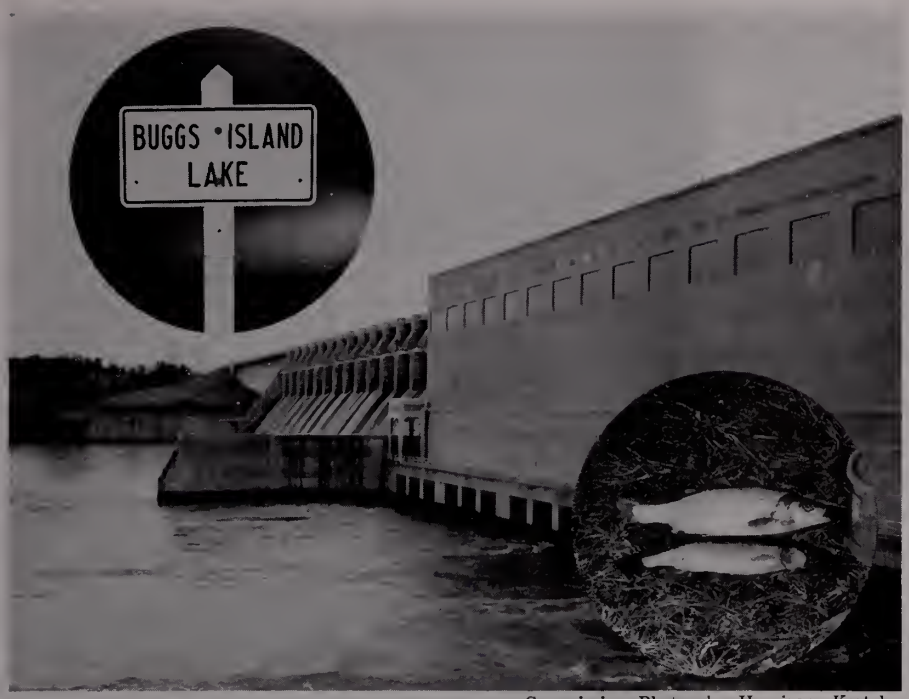
Game Commission fisheries research personnel Charles Hooper and Robert Brooks are shown emptying the contents of an egg net sample into a preserving jar. Such samples indicated that over 100 million striper eggs were liberated into the Roanoke River during the peak day of this year's run

Island Lake. In 1953, 1954 and 1955, the North Carolina Wildlife Resources Commission released five million fry in the 50,000-acre impoundment. These fish plus a number of stripers believed to have been trapped in the lake during construction of the dam have provided the nucleus for the present striped bass population in the reservoir.

The appearance of yearling stripers in the creels of sport fishermen in 1957 and 1958 clearly indicated that the stripers had spawned successfully because no stocking had been done since 1955. This evidence prompted an investigation into the reproduction, growth, and survival of stripers in Buggs Island Lake and the Roanoke and Dan rivers. In addition an attempt to evaluate the effect upon future spawning runs of proposed hydro-electric dams on the Roanoke River above Buggs Island Lake was begun.

For the past four years Virginia fish biologists have followed the striper spawning runs in the Roanoke River closely. Spawning success has been determined in part by the number of eggs collected during each spawning run. The number of eggs collected has increased each year. It is estimated that over 100 million eggs were liberated into the river during the peak day of this year's run, May 10. This tremendous reproductive potential will help assure the continued success of Buggs Island Lake stripers.

The Dan River, another major tributary of this reservoir, is also used by stripers for spawning but to a much lesser degree. Since the beginning of this study, egg sampling in this river has yielded few eggs.



When completed by the U. S. Army Corps of Engineers in 1953, the John H. Kerr Dam became the barrier preventing striped bass trapped above the dam plus other stripers introduced as fry from returning to the Atlantic Ocean. This landlocked population is thriving in the reservoir above the dam, Buggs Island Lake, and many are caught each spring as they run up the Roanoke and Dan rivers to spawn. Dams on the Roanoke River are the only real threat to their continued existence. The inset at lower right shows a striper (top) with a chain pickerel.

Commission Photos by Harrison, Kesteloo

Studies have also been conducted on the Roanoke River to determine angler success, fishing pressure, and the degree of utilization of adult stripers during the spawning run. This information was obtained through creel census, fish tagging and electric shocking.

Last spring creel clerks at the Game Commission's newly established public boat launching site on the outskirts of Brookneal checked 1,220 anglers who caught a total of 252 stripers. This total is estimated to be 80 percent of the total harvest. The fish averaged five pounds in weight and ranged from one pound to 13 pounds 8 ounces. More males than females were caught. Although no catch statistics were available last year, it is believed this year's total harvest surpassed last year's.

Creel census also revealed bucktails and doll flies to be the most productive artificial lures, while minnows rated number one in the live bait category. Early morning and late evening anglers came home with the best catches.

Fishing got off to a slow start this spring because of high water and unseasonably cool weather. It wasn't until April 25 that the first rock was caught in the Brookneal area. Fishing success increased rapidly, reaching its peak on May 8. During the height of the run, heavy rains sent the river rising and all but ruined the fishing. Thereafter, the run tapered off as did the fishing pressure, and the creel census was terminated on May 30. The majority of the stripers returned to the lake and the run was over for 1961.

An electric shocking device proved effective in capturing fish for tagging purposes. A total of 50 stripers were tagged, measured, and returned to the river by biologists this spring. Tagging returns will provide additional information on harvest rates and migration patterns of stripers in the Roanoke River and Buggs Island Lake. The success of this program depends on the cooperation of the sportsmen in returning these tags. A reward is offered for each returned tag.

In addition to the 50 tagged fish, an estimated 200 stripers were observed but escaped from the electric field of the shocker. These fish were turned up within a five-mile area between Brookneal and Clarkton. Sections above and below this area produced only a few stripers. This evidence suggests a rather confined spawning area between Brookneal and Clarkton.

Population studies in Buggs Island Lake over the past four years have shown a gradual increase in the striped bass population. At the same time, the bluegill and crappie populations have experienced a vast improvement. At the present time, bluegills and crappies are the major food items of the striper. Competition within these species has been reduced because of the striper's voracious appetite, and, as a result, better catches of sizeable bluegill and crappie have been made.

As the striper population increases, a need will exist to supplement the forage fish population. Anticipating that this situation may become acute within the next few years, the Virginia Game Commission in May of this year stocked 2,000 threadfin shad and 65,000 herring in Kerr Reservoir. The shad and herring are expected to reproduce and provide food for the increasing striped bass population. These fish make ideal forage fish because they occupy the vast open stretches of the reservoir, feeding on microscopic plant and animal life, and do not directly compete for food with any other species of fish. The success or failure of these forage fish will probably determine the future population level of stripers in the lake.

Probably the greatest threat to the striped bass fishery in Buggs Island Lake is the development of hydro-electric installations. The construction of dams immediately above the reservoir on the Roanoke River would eliminate the upstream migration of stripers to and from their spawning grounds and would virtually ruin the fishery. The Smith Mountain project now under construction is located 40 miles above the spawning grounds and will probably have little effect on the spawning run.

Barring the development of threatening dams, the future of Virginia's landlocked striper holds great promise. The new inhabitant of Buggs Island Lake, a reputable fighter with excellent eating qualities, should continue to attract anglers from far and near.

SQUIRRELS IN SEPTEMBER?

By RICHARD H. CROSS, JR.

Chief, Game Division

Commission Photos by Kesteloo

NOT many years ago while working in one of the eastern Virginia counties, I encountered a thoroughly bewildered squirrel hunter. It was on the opening morning of the early hunting season, the weather was perfect and there were squirrels aplenty. Yet this fellow, who had bagged only two animals, was through for the day and for the season; and he didn't waste any time telling his story.

This nimrod had started at daybreak and in a short time bagged one squirrel. Later, his curiosity compelled him to fire into a leaf nest and that shot ended an otherwise enjoyable hunt. The second squirrel, killed in the nest, was retrieved from his hunting coat pocket as he talked. The little animal was about four inches in length, excluding the tail, and the eyes were yet unopened. Undoubtedly, the remainder of the brood had been killed by the same blast but they failed to fall from the nest. He had brought the young animal back in order to convince his buddies that September is not the time to hunt squirrels.

Written 12 years ago when the author was a district game biologist, this article, still valid, is reprinted from the September 1949 issue of *Virginia Wildlife*. The fact that little progress has been made since that time in eliminating open seasons on squirrels in September is discussed by the author on page 9.

Despite the fact that many young squirrels are dependent on their mothers until early October, squirrel seasons open in September in 26 Virginia counties. This means a valuable resource is being wasted.

Many sportsmen prefer to wait until later in the fall to hunt squirrels, knowing that they will be full-grown by that time.

The practice of shooting squirrels in September has long been a question widely discussed by sportsmen in Virginia, and it has become more important in recent years along with the tremendous increase in the numbers of hunters. Obviously, the question has two sides and it might be well to review the evidence for and against the early hunting season.

In favor of September hunting are those accustomed to stalking squirrels when they are "cutting" hickory nuts. At this time the weather is pleasantly cool, seldom becoming hot enough to cause discomfort. Squirrels are extremely active and, therefore, easily found. As a general rule they feed in groups, apparently traveling from one hickory tree to another as the food supply is exhausted.

In some instances the landowner, suffering squirrel damage to his corn crop, welcomes the hunter who soon succeeds in preventing further loss by forcing the animals to retire to the deep forests. However, such damage seldom occurs except during times of mast shortage.

Still another point in favor of the early season is occasionally voiced by some of the more experienced law enforcement officers. It is their opinion that habits formed over a long period are not easily broken. Especially does this

BECAUSE the gray squirrel article reprinted here originally appeared in VIRGINIA WILDLIFE in 1949, it is obvious that we knew all of the disadvantages of a so-called "early squirrel season" 12 years ago. Then, it was legal to shoot squirrels prior to October in 38 Virginia counties; now, 12 years later, it is still permissible in 26 Virginia counties to kill female squirrels while they are suckling young of the fall litter. Why?

Whenever possible, the Virginia Commission of Game and Inland Fisheries sets game and fish seasons and bag limits based on the best available biological data and with the concurrence of the majority of Virginia's sportsmen. However, no matter how much factual information we might possess, it is extremely difficult to utilize these facts effectively unless our hunters agree with the regulations our research shows are appropriate. Thus, a large number of Virginians have not recognized September squirrel hunting as the waste of an extremely important wildlife resource.

There are those who argue, and rightly so, that the early shooting has no appreciable effect on the following year's squirrel populations. But *we have no excuse to waste*, regardless of the circumstances.

Our game division's policy states that we shall "strive to obtain public acceptance of an optional early squirrel hunting season opening on or after October 1, in order to assure a maximum harvest without waste caused by shooting when the fall litter is still in the nest." Unfortunately, many of the September seasons have been set by legislative act and therefore cannot be changed except by action of the General Assembly.—R. H. C.

apply to those who, through lack of proper education, might hold little regard for the game laws. Thus, a change in the hunting season dates might bring about an excessive amount of poaching, and the "still hunter" is by far the most difficult to apprehend. A later season may only penalize the conscientious, law-abiding citizen.

The game manager favors a later squirrel hunting season for several reasons. First of all, his success is measured in numbers of birds and animals produced for the sportsman to harvest. Therefore, he desires optimum conditions under which to produce this surplus. Recent squirrel research conducted in Virginia has revealed some interesting facts concerning the animal's life history. It has been proved that the gray squirrel produces two litters each year. The first appears in mid-February following a gestation period of approximately 44 days. These young squirrels remain in the nest and are dependent upon the parent animal for about 60 days. The second brood comes between August 1 and August 15 and does not leave the nest until after October 1.

The last statement is the game manager's argument against September shooting. "Why," he asks, "should we kill the proverbial goose that lays the golden egg?" Study has revealed that the average squirrel brood is composed of 2.5 individuals. Then, how can we justify the taking of female squirrels while they are suckling young broods in September? For each adult female bagged by the hunter, 2.5 additional animals die because of starvation. Not only is the practice unsportsmanlike, it is very poor business.

While the conflict between the breeding season and hunting dates is most important, there is still another reason for later shooting. At lower elevations, generally east of the Blue Ridge Mountains, squirrels are usually heavily infested with botfly larvae (commonly called warbles or wolves) during the summer and early fall. Numerous animals are shot and discarded by sportsmen because of these infestations. By late October, however, the majority of the warbles have disappeared.

It has long been the contention of many hunters that irresponsible persons shoot other game species during the early squirrel season. This complaint is most often heard from turkey and grouse hunters. Undoubtedly, young turkeys are easier to kill than the more mature birds found in late November and it is possible that some are poached by early squirrel hunters.

These, briefly, are the facts concerning squirrel shooting in Virginia. It's up to you, Mr. Sportsman, to choose your hunting dates.

* * *

Thirteen Virginia counties now have September squirrel seasons set by legislative act; another 13 counties have September squirrel seasons set by game commission regulation.

Counties where the squirrel season opens on September 1 by legislative act: Albemarle, Buchanan, Greene, Greensville, Scott, and Southampton. Counties where the squirrel season opens on September 15 by legislative act: Carroll, Floyd, Franklin, Giles, Grayson, Henry, and Patrick.

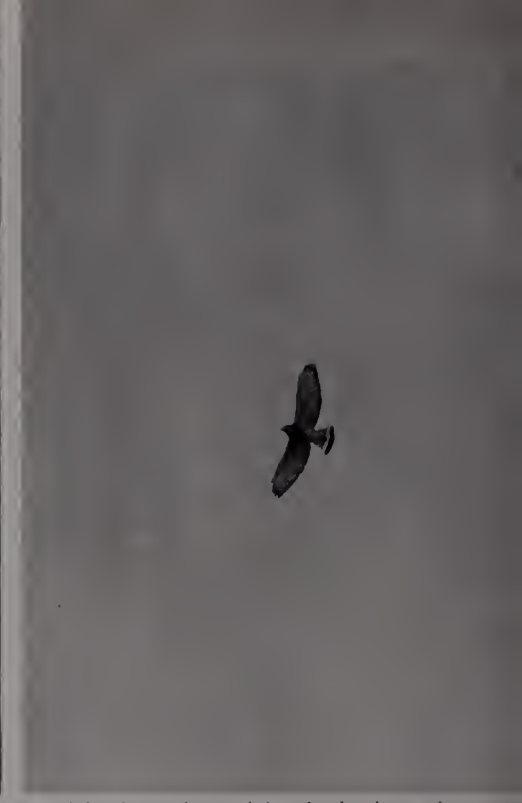
Counties where the squirrel season opens on September 1 by commission regulation: Halifax and Madison. Counties where the squirrel season opens September 15 by regulation: Bland, Dickenson, Lee, Montgomery, Pulaski, Russell, Smyth, Tazewell, Washington, Wise and Wythe.

Twenty-two counties and two cities, on the other hand, are affected by legislation which prohibits the opening of the squirrel seasons in these areas prior to the opening of the general hunting season. This legislation prevents the game commission from setting a uniform statewide squirrel season in October prior to the opening of other hunting seasons. Counties and cities in this category are: Appomattox, Augusta, Brunswick, Charles City, Charlotte, Chesterfield, Dinwiddie, Gloucester, Hampton City, Hanover, Henrico, James City, King and Queen, King William, Lunenburg, Mathews, Middlesex, New Kent, Newport News City, Powhatan, Prince Edward, Prince George, Princess Anne, York.

Editorial (Continued from Page 3)

the essay is assigned, we can rest assured that those children involved will be exposed—perhaps for the first time—to some basic concepts of natural resource conservation and wildlife management. The essay contest subject this year is a stimulating one—"Why Legal Hunting and Fishing Are Good Conservation Practices"—and the $2,900 in cash prizes to be awarded next spring includes a $700 college conservation scholarship, a prize worth working for.

We live in a land of plenty today, but what of the future? Will tomorrow's citizens, in ignorance, permit wasteful resource exploitation and open spaces destruction or will they have the sense to keep portions of God's green earth sacred and unscarred as places to which they can retreat for mental, physical and spiritual re-creation? The eyes of our youth must be opened; they must be shown the way. Let's help our teachers and other youth advisors learn the conservation story, and urge them to tell that story to all the youngsters with whom they come in contact.—M.R.C.



At left, a hawks-eye view of Reddish Knob in Virginia's Augusta County; at right, a migrating broad-winged hawk as observed by the hawk watchers on Reddish Knob.

Hawk Migration Tallied Annually - -

REDDISH KNOB RENDEZVOUS

Text and Photos by GEORGE H. HARRISON

MERE pinpoints in a deep blue sky are enough to excite patient "hawk watchers" at Reddish Knob in late September.

Formerly associate editor of *Virginia Wildlife*, the author is now editor of *Pennsylvania Game News* published by the Pennsylvania Game Commission.

Picnic tables, rest rooms, and a mountain spring on Reddish Knob make it an ideal observation site.

Hawk counting is a specialized form of bird watching. Each fall, Virginians and West Virginians are found on a number of high points near the state line patiently engaged in the art of counting hawks as they glide by on their annual migration south.

Hundreds and sometimes thousands of hawks "hop" a free ride south on thermal drafts above the deep valleys of the Appalachian and Blue Ridge Mountains. Almost as if asleep, these big birds of prey glide for miles in an effortless flight. Soaring, wings fixed, they demonstrate an art that has challenged man since the beginning of time.

The hawk flights are as unpredictable as the weather. Beautiful days with favorable winds in late September are the best bet, but some groups have seen the largest flights on cloudy days. You never know.

For a number of years, members of the Brooks Bird Club of West Virginia have met with members of the Virginia Society of Ornithology at Reddish Knob on the third week-end in September. The fire tower there provides an excellent observation platform for scanning the sky for hawks. The small table top summit at Reddish Knob is adequately equipped with rest rooms and picnic tables. Overnight camping is possible for those who enjoy strong winds and low summer temperatures. A cold mountain spring (49 degrees in mid-summer) maintained by the U. S. Forest Service supplies more than enough water for thirsty "hawk watchers."

Observations on Hawk Migrations on the Shenandoah Mountain, Virginia, 1949-1959

By MAX M. CARPENTER
Game Biologist
Dayton, Virginia

IN the fall of 1949 a hawk migration study was initiated by the Maryland Ornithological Society. The purpose of the study was to find routes used by the majority of the hawks, to check on the species composition, to find the period or periods of peak migration, and to give neophyte bird watchers a chance to learn hawk identification. The over-all aim of the study was information for setting up better laws for the protection of these birds of prey while in migration.

At the time this study was started, other states around Maryland were encouraged to gather supporting data that would give a wider picture of the hawk migration pattern. Consequently, a few birders in the northwestern part of Virginia cooperated by spending from two to four days a year on fire towers to record any movements of hawks in that part of the state. The study of the migration of hawks in Virginia, therefore, has been confined largely to the ridges of the Shenandoah Mountain and, to a lesser extent, of the Blue Ridge.

The hawk watchers use binoculars constantly to search the sky as they count the hawks that glide past the Forest Service lookout tower.

Campers will enjoy tenting at Reddish Knob if they don't mind strong winds and low temperatures.

Most of the hawks passing Reddish Knob are broad-winged hawks. Last year, 300 were recorded in a single flock which passed over the fire tower shortly before noon on September 24.

In some parts of eastern United States, "sportsmen" have taken this opportunity to slaughter the migrating hawks. Fortunately, laws now prohibit wanton destruction of these birds which are more beneficial than harmful to man.

Although perhaps a somewhat strange form of recreation, waiting on a windy mountain top in late September for the arrival of a flock of hawks beats the city street, the crowded swimming pool and that squeaky desk chair.

Area of Study

Observations of hawk movements in this study were made from three fire towers on Shenandoah Mountain: at Reddish Knob in Augusta County and Meadow Knob and High Knob in Rockingham County. These towers lie in a straight line and are only a few miles apart, no more than six or seven miles at the most. Meadow Knob and High Knob are in

Adapted from report in the September-October, 1960, issue of *The Raven*.

sight of each other and are a little less than three miles apart. On September 27, 1959, observers were on both knobs and hawks were seen at each knob, but from the species, time, and number, at no time could the same bunch of hawks be observed from both towers.

Direction of Flights

Generally speaking, the bulk of the hawks follow the top of the main ridge of Shenandoah Mountain, but some variation of flights was seen on different days. No doubt, slight variations of thermal drafts would cause the hawks to fly farther to the east or west, depending upon the general direction of the wind. In the 1949 Maryland study, it was mentioned that if the wind was from the north or northwest, flights would be good but were stopped if the wind changed to the south or southwest. Our observations do not show this to be true, as the wind was from the southwest on several of our better days. For instance, on September 21, 1957, 674 hawks were counted at Reddish Knob, and the next day 187 hawks were counted at High Knob. On both days the wind was from the southwest. A week later at Reddish Knob only 10 hawks were seen and the wind was from the northeast.

Number of Species, Composition

Accompanying Table I shows the number of hawks seen from the three knobs, while Table II gives the names of the hawks and numbers of each species seen.

Table I. Number of Hawks Seen from Two Towers for Years 1949-1959

Year	Reddish Knob	High Knob	Wind	Sky
1949	635	—	—	—
1950	130	—	—	—
1955	—	259	N-NE	Cloudy
1956	—	19	W	Cloudy
1957	715	187	SW	Cloudy
1958	29	—	SW-W	Cloudy
1959	315	—	NW	Cloudy
1959	149	24	SE	Cloudy

Table II. Species Composition of Hawks Seen for Years 1949-1959

Species	Number
Broad-winged Hawk	2,015
Red-shouldered Hawk	156
Red-tailed Hawk	25
Cooper's Hawk	23
Sharp-shinned Hawk	21
Osprey	24
Bald Eagle	8
Rough-legged Hawk	6
Marsh Hawk	5
Sparrow Hawk	2
Duck Hawk	1
Unidentified	208

Comparison with Other Areas

Is the Shenandoah ridge a main flight ridge? From observations made, it appears to be one of the main routes. It was believed at first that the Blue Ridge had flights as large, but in recent years (although less work has been done on the Blue Ridge) it appears the flights on the Blue Ridge are not as frequent nor used by as many birds.

In comparing flights in Virginia with some neighboring states, it seems they are about the same. Some 1949 totals

The Reddish Knob fire tower provides an excellent observation platform from which migratory hawks may be counted.

for Maryland, Pennsylvania, West Virginia, and Virginia run from two hawks all the way to 2,681 hawks. The Virginia count for 1949 was 635. There appears to be no area in Virginia where the hawks funnel through as they do in some of the northern areas where such high counts are made. Certainly, we have never been able to match the figure of 2,214 hawks seen by George Kelly in Calvert County, Maryland, in 1949, or Maurice Broun's record of 3,030 broad-winged hawks alone in 1956 at Hawk Mountain, Pennsylvania.

This has been an interesting study with a minimum amount of time expended. It is regretted that more observers have not been available from the start of observations. More interest has been shown the last two years among local members in this area, and it is hoped that interest will grow. The past two years we have had very fine assistance at Reddish Knob from the Brooks Bird Club in West Virginia.

The Migration of Birds

The flight of a bird is taken for granted by the average American citizen. Birds are seen on every hand, winging their way from tree to tree and from bush to bush in their quest for food. Yet, the flight of a certain type of bird known as "migratory" is not only one of the interesting, but most amazing of the many unusual attributes of the bird family.

The "why" of a bird's migratory instinct is a bit too complex for explanation. Weather conditions may be given as the main factor. Deep snows of the northern areas cover the normal foods of the winged migrants.

Many, many hundreds—perhaps thousands—of years ago, ancestors of the present migratory birds experimented no doubt with the idea of trying milder climes. These ancestors traveled southward until conditions that drew contented quacks and twitterings were found. They found that they had the stamina to make such lengthy flights and, from then on, it became a case in late fall of "It's getting chilly, Mirandy, pack up your duds and let's head South."

—Tom Ford

VIRGINIA WILDLIFE ☆ ☆ ☆ ☆

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

1961-62 SEASONS FOR DOVES IN VIRGINIA ANNOUNCED. Open seasons for mourning doves, woodcock and snipe in Virginia, practically unchanged from a year ago, have been announced by the Virginia Commission of Game and Inland Fisheries. Dove hunters will open fire on September 15 and may hunt through November 23 for this tricky target. Dove bag limits are 12 a day, 24 in possession (after the first day). Both woodcock and snipe seasons open on the opening day of the general hunting season, November 20. Woodcock may be bagged through December 29, snipe through December 19. Bag limits are four a day, eight in possession for woodcock, eight a day and eight in possession for snipe. Shooting hours are sunrise to sunset (STANDARD TIME) for woodcock and snipe, 12 o'clock noon to sunset E.S.T. daily for doves.

U. VA. OPENS BRUNSWICK COUNTY TRACT TO PUBLIC HUNTING. The University of Virginia and the Commission of Game and Inland Fisheries have signed an agreement whereby the 3,600-acre University-owned Seward Forest in Brunswick County will be opened to public hunting during the general open hunting season. This agreement brings the total amount of public hunting land in Brunswick County to 18,600 acres.

The primary interest of the University in opening this land is to assure favorable public relations in order to prevent and suppress forest fires, while the Game Commission's main interest is to improve conditions for wildlife and make land available for hunting. The Seward Forest was given to the University in 1932 by the late Dr. Walter M. Seward, who studied at the University of Virginia's medical school and was a well-known surgeon in New York City. The purpose of the forest was to provide a practical opportunity for practice and experimentation in forestry and to develop the University's school of forestry, which no longer exists.

COURTS CONVICT 155 OF VIRGINIA BOAT LAW VIOLATIONS IN JUNE. A total of 155 convictions based on violations of boating safety laws and regulations were recorded in Virginia courts during the month of June, 1961. Of these, 88 involved lack of required safety equipment (primarily life preservers), 47 involved failure to show registration number or have certificate aboard, 12 were water skiing violations (lack of life preserver or observer), and eight were for reckless or drunken operation of motorboats.

GAME COMMISSION STAFF ASSISTANT DAVEY RESIGNS. Stuart P. Davey, staff assistant with the Virginia Commission of Game and Inland Fisheries since May 16, 1960, resigned his position on September 1. Coming with the Commission in May of 1953, Davey served four years as game research biologist, specializing in recommendations concerning Virginia's expanding deer herds. Later, he became assistant chief of the education division. In 1959, he conducted a special field study for the director regarding information-education activities of state game wardens and biologists and assisted with the Commission's legislative program. Since his appointment as staff assistant, Davey has assisted in special projects regarding fish, game, education, fiscal matters and law enforcement and also has had the responsibility of administering the Virginia Boating Safety Act.

STATE GAME BIOLOGIST COGGIN RESIGNS. Joe L. Coggin, 36, has resigned his post as game biologist with the State Game Commission effective September 1 to accept a position as instructor of biology at Hampden Sydney College. Coggin joined the commission as information technician on July 1, 1954, and on May 16, 1958, transferred to the game division. He has been engaged in research to find ways of improving Back Bay for waterfowl for the past three years.

VIRGINIA HUNTING

Residents under 16 years of oge do not need a license to trap but must have a license to hunt. Landowners their husband or wife and children, and tenants who reside on the property ond hove the written permissian of the landowner are nat required to hove licenses to hunt ond trap on the landowner's property only.

In Virginia, no one is allowed to

- **hunt or trap on another's land without the landowner's permission;**
- **hunt with firearms or other weapon on Sunday;**
- **hunt while under the influence of intoxicant or narcotic drug;**
- **cut den trees or carry an axe with handle over 20" long or saw while hunting, without landowner's permission;**
- **molest nest, eggs, dens or young of any wild bird or animal except predatory or undesirable species;**
- **put out bait or salt or occupy baited blinds or places to take game birds or animals;**
- **hunt adjacent to forest fires;**
- **shoot any game bird or animal from any vehicle;**
- **hunt in the snow for any species except deer, elk, bear, migratory game birds (except woodcock), rabbits (by landowners only for their own use), and foxes (when hunted with dogs only).**

Nonmigratory birds and game animals may be hunted from one-half hour before sunrise to one-half hour after sunset. Foxes and furbearing animals may be hunted by day or night.

Game birds and game and furbearing animals may be hunted only with shotgun (no larger than 10 gauge, with capacity of no more than three shells), rifle (see restrictions below), or bow and arrow. Archers must use broadhead arrows only, with a minimum width head of ⅞ inch, and bows capable of casting any broadhead arrow in their possession 125 yards, for bear and deer. Crossbows and poison arrows may not be used. Firearms may not be carried while hunting with bow and arrow.

Use of a rifle for taking migratory game birds is prohibited.

Use of a rifle smaller than .23 calibre for hunting big game (deer and bear) is prohibited statewide.

Use of a rifle larger than .22 calibre for hunting is prohibited in the counties of Appomattox, Buckingham, Caroline (.22 long rifle maximum), Charles City, Cumberland, Goochland, Halifax, King and Queen, King George (except that in King George County larger rifles may be used to take woodchucks during the general closed hunting season), Louisa, Northumberland (only rim-fire .22 permissible) and Prince William.

Use of a rifle for hunting deer is prohibited in all of the above counties and in the counties of Chesterfield, Essex, Hanover, Isle of Wight, King William, New Kent, Prince George, Richmond, Southampton, Surry and Sussex. The use of a rifle for hunting deer and bear is also prohibited in Nansemond and Norfolk counties, except in that part of Dismal Swamp located as much as 100 yards from any railroad or public highway, and then only when the rifle is used on a stand elevated not less than 15 feet above the ground.

Use of a shotgun loaded with slugs for hunting is prohibited in the counties of Goochland, King William, Louisa, Northumberland, Prince George, Prince William and Richmond.

Immediately upon killing a bear, deer or turkey, a hunter must detach the appropriate tab from his bear-deer-turkey license and attach it to the kill, then take the kill to an official checking station where the license tab will be exchanged for an official game tag.

Dogs may not be used to hunt deer: (1) west of the Blue Ridge; (2) east of the Blue Ridge in Nelson County lying west of Rt. No. 151, in Amherst County lying west of Rt. No. 29, in Franklin, Henry, Loudoun and Patrick Counties; and (3) statewide during the archery season Oct. 16-Nov. 1 except in Norfolk and Princess Anne Counties and a portion of Nansemond County.

Dogs may not be used to hunt bear, foxes, and bobc during the open season for hunting deer in the n tional forests and in Alleghany, Amherst (west Route 29), Augusta, Bath, Botetourt, Clarke, Frederi Highland, Nelson (west of Route 151), Page, Ro bridge, Rockingham, Shenandoah, and Warr Counties.

HUNTING SEASONS AND BAG LIMITS

No hunting is permitted on the national fore before November 20 or after January 31 except w bow and arrow during archery season for deer, be and squirrel.

RABBIT (Bag limit 6 a day, 75 a season)
GROUSE (Bag limit 3 a day, 15 a season)
Statewide . . . . . November 20-January

QUAIL (Bag limit 8 a day, 125 a season)
Statewide (exceptions below) November 20-January

Counties of Bland, Buchanan, Carroll, Dickenson, Gil Grayson, Lee, Pulaski, Russell, Scott, Smyth, Tozewe Washington, Wise, and Wythe November 20-December

TURKEY (Bag limit 1 a day, 2 a season, either sex)
Statewide, where permitted . . . November 20-January 1

*Pittsylvanio County (mole turkeys only) . . . . . November 20-Jonuary

(Counties closed to turkey hunting: Bland, Buchon Carroll, Charles City, Clorke, Dickenson, Flayd, Frank Giles, Gloucester, Groysan, Greene, Henry, Loncost Lee, Madison, Mathews, Middlesex, Mantgomery, Norfo Northumberland, Page, Patrick, Pulaski, Rappahonno Richmond, Roanoke, Russell, Scott, Smyth, Tozewell, W ren, Washington, Westmoreland, Wise ond Wythe, a also the portions af Rockinghom ond Shenondoah lyi between Routes 11 and 340. Turkey hunting is also p hibited during the general open hunting seoson on t Gathright Wildlife Monogement Area in Bath ond Al ghany counties and on the Big Levels Wildlife Monageme Area in Augusto County.)

PHEASANT hunting prohibited outside of licensed sho ing preserves.

RACCOON
East of Blue Ridge (except Bedford County) (no bag limit) . . . . . October 1-March 1
*Essex County . . . . . cantinuous open seos
West of Blue Ridge and Bedford County (Bag limit 2 a day) . . . October 15-January 31
*Augusto, Bath, Clarke, Frederick, Highland, Pog Rockbridge, Rockinghom, Shenandooh, and Warren. . . . October 15-Februory 2
(Bog limit 1 a doy, 3 o seasan in Scott County.)

OPOSSUM (No bag limit)
Statewide . . . . October 16-January

MINK (No bag limit)
Statewide . . . . . December 15-January

MUSKRAT, BEAVER and OTTER hunting prohibited

BEAR (Bag limit 1 a season over 75 pounds li weight)
Statewide (exceptions below) November 20-January

Dismol Swamp (Princess Anne, Norfolk and that porti of Nansemond County lying east of o line as follows: b ginning at a point on Route No. 10 where it interse the Isle of Wight County line thence along this highw to its intersection with the corporate limits of Suffolk, ther through Suffolk to its intersection with Route No. 6 (White Morsh Raad) and thence olong this highwoy in southwest direction to Raute No. 604 (The Desert Roa and thence south alang this highway to the North Coroli line) . . . . . October 2-November

Isle of Wight ond in that portion of Nonsemond Cou to the west of the line established in the preceding pa graph . . . . . November 10-Jonuary

LAWS * 1961-62

Bland, Giles, Graysan, Montgomery, Pulaski, Smyth
azewell, Washington and Wythe Counties (use of dogs
ahibited during deer season) .... November 6-January 5

.K hunting prohibited.

RCHERY SEASON

In counties having general open seasons on deer, ear and squirrel, 1 deer of either sex, 1 bear, and 6 quirrels per day may be taken with bow and arrow nly (use of dogs prohibited) October 16-November 1

EER, SQUIRREL AND FOX SEASONS AND BAG LIMITS

NUMBERS refer to seosan, LETTERS to bag limit (see codes belaw). omple: Deer in Spotsylvonio County — 1-F meons seoson 1 ovember 20-Jonuory 5) ond bag F (2 a season, one of which ay be o doe).

SEASON CODE (dotes inclusive):

—November 20-Jonuory 5
—November 20-25
—November 10-Jonuary 5
—October 2-November 30
—November 20-22
—November 20-Jonuory 31
—October 2-14
—September 1-15
—September 15-30 ond Novem- ber 20-Jonuory 1
—Februory 1-September 30
—November 20-Jonuory 20
—November 20-Jonuory 15
—September 15-30

14—September 1-30
15—September 15-October 14 ond November 20-Jonuory 1
16—continuous open seoson
17—October 2-Jonuary 31
18—continuous open season except daytime April 1-September 1
19—September 1-Morch 31
20—October 16-Jonuory 31
21—November 1-Februory 28 regordless of snow
22—October 2-Morch 31 regard- less of snow
23—October 2-Februory 28

DEER BAG LIMIT CODE (Limit 1 a day. Bucks only moy be ken unless otherwise specified. Where shooting of bucks only is rmitted, only those deer which have antlers visible above the ir moy be taken.):

-one o seoson, bucks only
-two o seoson, bucks only
-one o seoson, either sex during first three dovs
-two o seoson, one of which moy be o doe during first three doys

E—one o seoson, either sex
F—two o season, 1 of which moy be o doe
G—two o seoson, 1 of which moy be o doe during lost 15 doys
H—two o seoson, 1 of which moy be o doe during lost 5 days

ast of Blue lge" Counties	DEER Bag: see letter code	SQUIRREL Bag: 6 a doy, 75 a season	FOX No bag limits With dogs	FOX No bag limits With gun
ccomack	1-B	7,6	16	17
rrramore Is.	1-E			
bemarle	1-B	8,6	16	Closed
melia	1-B	6	1B	Closed
mherst				
west of U. S. 29	2-A	7,6	16	Closed
east of U. S. 29	1-B			
National forest lands		12		6
ppomattox	1-B	6	16	Closed
dford	Clased	7,6	16	17
unswick	1-B	6	16	17
ckingham	1-B	6	16	17
mpbell	2-A	7,6	16	17
roline	1-F	6	16	17
arles City	1-B	6	16	17
arlotte	1-B	6	16	Closed
esterfield	1-B	6	16	Greys 6 / Reds 16
lpeper	1-E	7,6	16	Closed
mberland	1-B	6	16	17
nwiddie	1-B	6	16	17
arville District				Closed
sex	1-F	6	16	17
irfax	1-E	7,6	19	17
uquier	1-E	7,6	19	Closed
vanna	1-D	6	16	17
nklin	2-A	15	16	6
oucester	1-F	11	16	17
ochland	1-F	6	16	17
eene	1-E	8,6	16	17
eensville	1-B	B,6	16	17
lifax	1-F	B,6	16	Closed
Game Preserves				17
mpton City	1-F	6	16	17
nover	1-F	6	16	17
nrico	1-B	6	16	17
nry	2-A	15	16	17
e of Wight	3-G	7,6	16	17
mes City	1-B	6	16	17
g Gearge	1-F	6	16	6
g and Queen	1-F	11	16	Greys 17 / Reds 16
g William	1-F	6	16	17
ncaster	1-F	6	16	17
Loudoun	1-E	7,6	19	Closed
Lauisa	1-F	6	16	Closed
Lunenburg	1-B	6	16	17
Madison	1-F	8,6	16	17
Mathews	1-F	11	16	17
Mecklenburg	1-B	6	16	17
Middlesex	1-F	11	16	17
Nansemond	4-D* / 3-B†	7,6	16	17
Nelsan east of Rt. 151	1-B	6	16	17
Nelsan west of Rt. 151	2-A			
New Kent	1-B	6	16	17
Newpart News City	1-F	6	17	17
Norfolk	4-D	7,6	16	17
Northampton	Closed	7,6	16	17
Narthumberland	1-F	6	16	17
Nattoway	1-B	6	16	Greys closed / Reds 17
Orange	1-E	6	16	17
Patrick	2-A	15	16	6
Pittsylvania	2-A	6	16	6
Powhatan	1-B	6	16	17
Prince Edward	1-B	6	16	6
Prince George	1-H	11	16	17
Princess Anne	4-D	6	16	17
Prince William	1-E	7,6	16	17
Rappahannock	1-E	7,6	19	Clased
Richmond	1-F	6	16	16
Sauthampton	1-F	8,6	16	17
Spotsylvania	1-F	6	16	17
Staffard	1-F	6	16	10
Surry	1-B	6	16	17
Sussex	1-F	6	16	17
Westmoreland	1-F	6	16	17
York	1-F	6	16	17

* That portian of Nonsemond County lying east of o line os follows: beginning at a point on Stote highway number ten where it intersects the Isle of Wight County line, thence along such highway to its intersection with the corporote limits of the city of Suffolk; thence through the corporote limits of the city of Suffalk to its intersection with Stote secondory highwoy No. 642 (White Morsh Rood), and thence olong Stote secondory highwoy No. 642 in o southerly and westerly direction to Stote secondory highway No. 604 (The Desert Rood), and thence sautherly olong State secondory highwoy No. 604 to the North Corolino line.

† That portion of Nonsemond County to the west of the line estoblished in the foregoing porograph.

"West of Blue Ridge" Counties	DEER Bag: see letter code	SQUIRREL Bag: 6 a day, 75 a seoson	FOX No bag limits With dogs	FOX No bag limits With gun
Alleghany	2-C	7,12	16	12
Augusta	2-C	12	16	16
Bath	2-C	12	16	12
Bland east of U. S. 21 & 52	5-A	13,12	16	12
Bland west of U. S. 21 & 52	2-A			
Botetourt	2-C	7,12	16	12
Buchanan	Closed	14,1	16	20
Carrall	2-A	15	16	12
Clorke	2-C	7,12	19:	Closed
Craig	2-C	7,12	16	12
Dickenson	2-A	13,12	16	12
Floyd	2-A	15	16	12
Frederick	2-C	7,12	16	21
Giles west of New River	5-A	15	16	12
Giles east of New River	2-C			
Grayson	2-C	9	16	6
Highland	2-C	12	16	12
Lee	2-C	13,12	16	12
Mantgomery	Closed	13,12	16	12
Page	2-C	7,12	16	12
Pulaski	2-A	13,12	16	12
Roanake	2-C	7,12	16	12
Rockbridge	2-C	12	16	16
Rockingham	2-C	7,12	16	22
Russell	2-C	13,12	16	12
Scott	2-C	13,12	16	23
Shenandaah	2-C	7,12	16	12
Smyth	2-C	13,12	16	12
Tazewell	2-A	13,12	16	6
Warren	2-C	7,12	16	12
Washington	2-C	13,12	16	23
Wise	2-C	13,12	16	12
Wythe	2-C	13,12	16	23

: Closed during deer seoson.

Principles of Game Management

Part Six:

Game and Habitat Analysis

By JOHN MADSON and ED KOZICKY
Olin Mathieson Chemical Corporation

LARGE-SCALE habitat improvement is the most effective way to increase an annual game crop.

It's also the most expensive, and no state conservation department can possibly pay for the habitat improvement known to be needed by a game species on a state-wide basis. With their limited funds, state game managers can do little more than improve habitat on a demonstration basis —either on private lands or state game areas—and strive to convince sportsmen and landowners of the vital role of habitat improvement in effective game management.

But if it is not feasible to improve a habitat for game, it may be possible to find game that can succeed in the habitat as it exists. This may be done by introducing an entirely new game species, or by developing a different strain of resident game.

This new game management tool might be described as a *game and habitat analysis* technique—a study of the game species and its requirements, combined with experimental releases of that game on test areas. This approach is far different from the old technique of mass-releasing a new game species with little, if any, biological evaluation of species and habitat.

Introducing a new game species entails trapping and transplanting. This is not "stocking" in the usual sense, for it is not a replenishment of resident game but an actual establishment of a new species that exists in a similar habitat elsewhere. "Elsewhere" may be an adjoining state or a mountain on the other side of the world.

This game introduction can involve native or foreign game. It is often useless to introduce a native American game species that has never existed in the area of release—for instance, releasing pronghorn antelope in northern Maine. It is often possible, however, to re-introduce a game species successfully into an area where it once existed, even though that may have been before modern memory. For example, wild turkeys have been successfully re-introduced into South Dakota after an absence of many years.

It may also be possible to introduce well-established foreign game birds. Some state conservation departments have set up special stations in an effort to develop strains of game birds that can survive in areas where those birds have never before succeeded.

For example, the Missouri Conservation Commission is working with two strains of black-necked pheasants and a strain of ring-necked pheasants in an effort to develop a bird for a more southern climate and poorer soil. Crosses of these strains are being test-released in the northern part of the state.

This program was prefaced by a detailed study of the various pheasant strains to find subspecies that have the greatest chance of success. Similar studies are being made

Commission Photo by Harrison

The Virginia Game Commission is propagating several species of foreign game birds at its game farm and releasing them in specially-chosen areas in Virginia in hopes of establishing wild populations. Above, game farm manager Dennis Hart and an assistant are shown cleaning a pheasant breeding pen at the Cumberland game farm.

of the bamboo partridge and the Reeves' pheasant for other regions within the "Show-Me State."

The most spectacular type of game introduction occurs when a foreign species is immensely successful and partly or wholly fills vacancies caused by the disappearance of native game.

The dramatic success of the ring-necked pheasant in the upper Midwest is a classic example. As the virgin prairie was put to corn, oats and wheat, the native pinnated grouse or "prairie chicken" faded. A new habitat had been created, and it was unfilled by any large upland game bird.

With the introduction of the ring-necked pheasant in the 1920's, this new habitat was swiftly filled by an amazingly rugged, sporty and colorful game bird that was hailed by sportsmen and game managers alike. Concurrent with the success of the ringneck were the introductions of the chukar and Hungarian partridges. These three exotic game birds have at least reinforced native bird populations, and in some cases have entirely replaced certain native game birds which found the changing habitat intolerable.

There was no biological investigation to determine the ringneck's fitness for North American tenancy. The bird was simply introduced, and it took.

Flushed with success, many American sportsmen and some game managers hopefully began to release other game birds: African guineas, francolins, capercaillies, coturnix quail, sand grouse, and golden, Reeves' and Lady Amherst pheasants. None of these became well established, and the ringneck's phenomenal success story has not been repeated.

Most of these foreign game birds simply vanished soon after their release, for they were placed in habitats that were inadequate or even hostile. However, the possibilities for these and other species have not been exhausted, even though many game introductions have been disappointing.

This recent approach of either finding a new game species or developing a successful strain for the existing habitat is promising. Habitat improvement is still the best answer to game scarcity, but broad habitat improvement programs are usually too costly to be practical. An alternative is to find or develop game that can thrive in the habitat as it exists. This *game and habitat analysis* technique won't fill our game bags overnight, but it deserves consideration and support.

Descriptions and Life Histories of

Virginia's Game Fishes

(Conclusion)

By ROBERT G. MARTIN
Chief, Fish Division

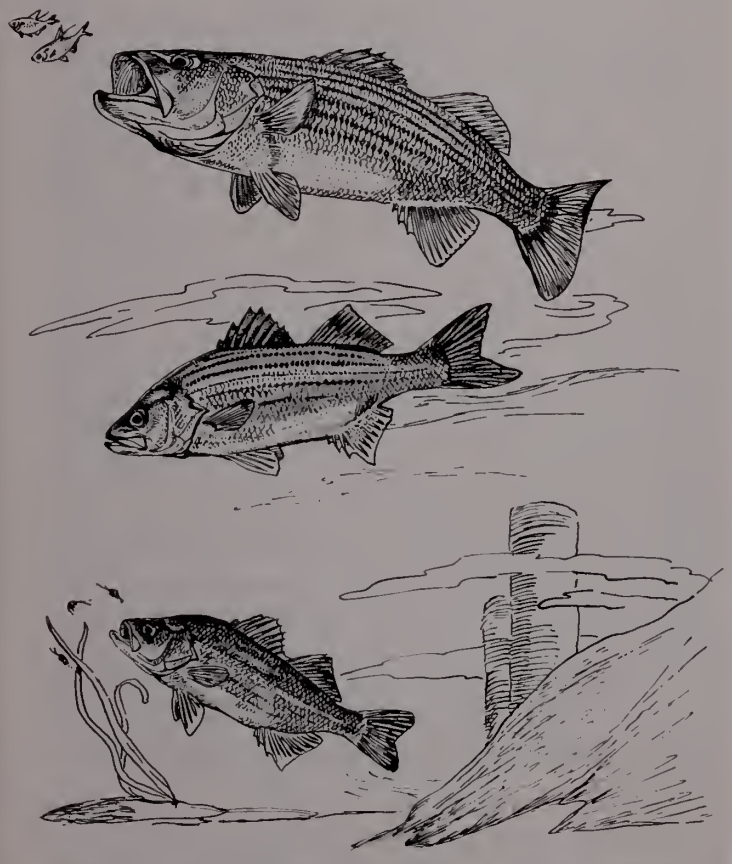
LAST month we described the trout, sunfish, walleye and chain pickerel of Virginia. In this concluding article on Virginia's game fishes, the appearance and habits of the members of the sea bass, catfish and sucker families and the carp, gar and bowfin are covered.

The Sea Basses

Striped Bass (*Roccus saxatilis*)

The striped bass, white bass, and white perch are the only members of the sea bass family found in Virginia's inland waters. Largemouth, smallmouth, and spotted bass are actually members of the sunfish family.

The white bass is the only one of the three Virginia sea bass which is strictly a fresh water species. Both the striped bass and the white perch frequent the bays and estuaries of tidal rivers in the Atlantic Drainage. The three species resemble each other closely; all have two separate dorsal fins, and both the striper and white bass have seven longitudinal black lines on their sides. The absence of longitudinal stripes and the smaller mouth distinguish the white perch from the other two species. Stripers are longer and more streamlined than the deeper-bodied white bass.



The sea basses (from top): striped bass, white bass, white perch.

The striped bass, or "rock," as it is known locally, is the largest member of the family. A 50-pound, 8-ounce striper taken from the Atlantic Ocean off Cape Charles is the largest recorded for sport fishermen in Virginia. Larger fish have been taken by commercial fishermen.

Still one of the most popular and abundant game fishes, its abundance in colonial Virginia was truly astonishing. Early historical accounts describe the capture of untold thousands for both domestic use and export to England. Crude nets, seines, and even bare hands were employed to capture them while concentrated during their annual spring spawning run. Their preference for rocky, swift flowing streams for spawning, such as the James in the vicinity of Richmond, led to the name "rockfish."

Unlike largemouth bass and other sunfishes, stripers make no nest nor offer parental protection to eggs or young. This lack of parental attention is compensated for by the prodigious number of eggs produced. One 10-pound female, for example, will spawn up to a million eggs. The semibuoyant eggs are shed randomly, usually in shallow, fast flowing riffle areas of inland streams or the upper reaches of tidal waters, and are dependent upon the current or the ebb and flow of the tide to keep the eggs in motion until they hatch. This usually requires between 36 and 48 hours at preferred water temperatures of 65 to 70 degrees. If the eggs settle to the bottom prior to hatching, they quickly suffocate. This appears to be the single most important factor in successful spawning.

Food habit studies in Virginia have shown that striped bass are primarily fish eaters, particularly in fresh water situations. Likewise, because of their large average size and rapid growth rate they require large amounts of food for best survival. The only successful population of striped bass in a strictly fresh water habitat in Virginia is found in Buggs Island Lake. The large size of this impoundment, abundant food supply available, and optimum spawning habitat furnished by its major tributaries, the Roanoke and Dan rivers, are responsible for this population. The fact that these spawning streams are large and have not been dammed for a considerable distance upstream from the reservoir is thought to be particularly significant in the successful establishment of the striper.

White Bass (*Roccus chrysops*)

Although strictly a fresh water species, the white bass is closely related to the striped bass and shares many of the charactertistics of its larger sea-going cousin. Maximum size is around five pounds and the average fish creeled is less than two pounds.

Prior to their successful introduction in Claytor Lake in 1957, white bass were found only in the Clinch and Holston river systems in southwest Virginia. Studies are underway to determine if this valuable species can be transplanted successfully to other Virginia waters. Extreme caution will be exercised in such a move because many introductions of ap-

parently desirable species have had disappointing or actually harmful results. Like stripers, white bass do best in large impoundments, and attempts to establish them in small lakes have not been successful.

White bass make annual spring spawning runs up tributary streams from large impoundments or large slow-moving streams which they seem to prefer. While Claytor Lake affords the best year-round fishing for this species, spawning runs in the Clinch and Holston rivers provide a great deal of sport during the spring months. During these spring spawning runs the fish are highly concentrated and vulnerable to angling. The same baits, except on a smaller scale, that are effective for stripers will interest the white bass. A school fish through its life span, it seldom travels alone and fishing for this species is usually an "all or nothing" proposition depending on whether the angler can locate a feeding school.

Spawning temperatures vary from 60 to 70 degrees. As with other members of the family, the reproductive potential rate of the white bass is extremely high. For example, only 119 adults were stocked in Claytor Lake in 1957. These few fish were sufficient to establish a large population there in less than three years.

Fish of any available species furnish the bulk of their diet. Crayfish are taken to some extent and emerging mayflies are eaten to the exclusion of most other food when the hatch is heavy.

White Perch (*Roccus americanus*)

The white perch, better known as a "stiff back" in the major tidal rivers or a "bluenose" in the Norfolk-Back Bay area, is an example of a desirable sport fish species in one habitat which becomes a pest when transplanted to other waters. In the large salty and brackish tidal streams and bays of the Chesapeake Bay area it grows well and is a desirable pan fish. Specimens averaging a half pound are common and occasionally one will exceed two pounds. Back Bay in Princess Anne County is one of the better fishing spots for this species, particularly in October and November. However, it has been introduced widely in fresh water ponds throughout eastern Virginia with a monotonous lack of success. Invariably its high reproductive potential is its own undoing. The vast number of young produced quickly eat themselves out of house and home and stunted populations develop. Since their food habits are similar, other desirable fresh water pan fish species such as bluegill are likewise affected. Two factors at least seem responsible for their unsuccessful adaptation in fresh water ponds. The smaller size and more uniform characteristics of fresh water ponds are not conducive to supporting additional forage species, and too few predator species are available in these waters to effect sufficient control of prolific spawners such as the white perch.

The Fresh Water Catfishes

Several fish species found in Virginia waters are not classed officially as game fish, but these less glamorous species provide many hours of angling pleasure and excellent food for fishermen acquainted with their potentialities. Many an otherwise unsuccessful fishing trip has been salvaged by the presence of hungry channel cats, redhorse, or carp.

Channel Catfish (*Ictalurus punctatus*)

Perhaps the most widely esteemed of these species and of the members of the catfish family, the channel catfish is the most widely distributed and leads the list for both sport and table use.

It prefers clearer and swifter water than other catfish species but is also at home in the large and turbid streams of the lower piedmont and coastal plain. It may be told from other Virginia catfish by the more deeply forked tail, smaller head and more streamlined form. Dark pigment spots usually dot the sides and back; however, these often fade or entirely disappear with increased size and age. Maximum size in Virginia waters will not exceed 25 pounds. While it feeds extensively on crayfish and other bottom-dwelling organisms, the channel catfish will not pass up any available food including live fish or carrion. Spawning usually occurs in early June in Virginia. Hollow logs or undercut banks in relatively large streams are preferred spawning sites. The male channel catfish drives the female away after spawning and protects the eggs and newly hatched fry until they are able to fend for themselves.

The Bullheads

The channel catfish's smaller cousins, the bullheads, of which there are four species in Virginia, favor smaller streams and ponds. They exhibit great tolerance of turbid or polluted water. Their average size is less than one pound, with fish over three pounds a rarity. Their spawning and food habits are similar to the channel catfish.

Flathead Catfish (*Pylodictis olivaris*)

The flathead catfish, or yellow catfish, as it is sometimes known, is the largest of the catfish family in Virginia. In the New River and other southwest Virginia streams it sometimes reaches weights up to 50 pounds. It feeds on fish more consistently than other catfish species.

The Sucker Family

White Sucker (*Catostomus commersoni*)
Yellow Suckers, Redhorse (*Moxostoma* spp.)
Chubsuckers (*Erimyzon* spp.)

The sucker family is one of the most widely distributed of all Virginia fishes, and various species exhibit great latitude in habitat preference. In the mountains and upper piedmont, the common white sucker may often be seen side by side with brook and rainbow trout. Sucker fishermen in the smallmouth bass streams of western Virginia are most familiar with the redhorse and yellow suckers. In coastal plain streams the familiar chubsucker, or mullet, may share the same pool with largemouth bass, bluegill and crappie. Their bottom-feeding habits have been responsible for giving the impression they are scavengers and feed mainly on filth. However, the reverse is true for most species. In fact, suckers are usually the first species to be affected by any pollution which reduces the oxygen content of the water. Insect larvae and other bottom organisms make up the bulk of their diet. They are most vulnerable to angling during the winter and early spring months. Studies have shown with few exceptions, these notably on trout streams, that members of the sucker family have little effect on game fish populations. They apparently occupy a different habitat niche in the larger streams, and little is to be gained by their removal.

Carp (*Cyprinus carpio*)

Perhaps the most infamous example of indiscriminate

Representative non-game, or "rough," fish (left row, from top): channel catfish, yellow bullhead, chubsucker, redhorse sucker; (right row, from top) bowfin, white sucker, longnose gar, carp.

stocking of exotic fish species is the introduction of the carp in the United States. Introduced around the turn of the century, it may now be found in every watershed in Virginia. It prefers the larger streams and ponds and can withstand more turbidity and pollution than native species. Specimens up to 50 pounds have been reported from Virginia waters. Four to 10 pounders are common. Spawning takes place in early spring, and the eggs are deposited on vegetation in shallow marshy areas. Almost all forms of plant and animal life are utilized for food.

In addition to utilizing food of the more desirable food and sport fish species, its habit of rooting aquatic vegetation which destroys valuable waterfowl foods and muddies the water has given the carp a bad reputation with fish and waterfowl managers. However, detailed studies conducted in Virginia and in other sections of the country have revealed that the harmful effects of carp are often exaggerated. Summarized, these findings indicate that carp control is only desirable when large carp populations build up in shallow water areas which are intensively managed for either largemouth bass fishing or waterfowl. In such locations carp actually suppress game fish populations and waterfowl usage. Carp populations large enough to harm game fish seldom develop in the large streams or reservoirs in Virginia. In fact, the carp in some muddy waters in eastern Virginia offer more fishing potential than game fish species.

Longnose Gar (*Lepisosteus osseus*)

Bowfin (*Amia calva*)

In contrast to catfish, carp, and suckers which feed chiefly on small aquatic plants and animals, the longnose gar and bowfin (mudfish) are primarily fish eaters. These are among the most ancient fishes in existence and are often referred to as living fossils. The long, slender, heavily toothed snout of the longnose gar sets it apart from all other Virginia fishes. A long greenish dorsal fin with an olive-colored margin is the trademark of the bowfin; males have a distinct black spot edged with yellow or orange at the base of the tail. The bowfin is confined chiefly to slow-moving streams and ponds in eastern Virginia. It requires aquatic vegetation and clear water for successful reproduction. The requirements of the longnose gar are similar, but it has a much greater tolerance of turbidity.

Most fishermen consider these predator species unduly destructive of more desirable species, and frequent attempts are made to reduce their numbers. However, careful investigation of their habitat and usual companion species indicates that wholesale eradication is often not desirable. In many instances the habitat is not suitable for the more preferred predator species such as the largemouth bass, and their indiscriminate removal results in an overpopulation of pan fish species and a subsequent decline in fishing quality.

Most of the so-called rough or trash fish species—carp, suckers, gar, bowfin—have a Jekyll and Hyde personality, and it is easy to either condemn or praise them. Where the complete habitat can be controlled to some extent such as in small fishing ponds and waterfowl feeding area, control is both necessary and advisable. While we may not understand thoroughly their function in fish populations, studies have shown that, in larger waters, they often fill a necessary or otherwise vacant niche in the habitat and attempts at wholesale eradication are seldom justified or desirable.

How Wildlife Conservation Needs Can Be Met in My Community

By HAROLD JACKSON DONNELLY
Willis, Virginia

THE LAND is our heritage and its natural resources our wealth. If we are to keep these God-given gifts we must prevent waste, battle against greed, mismanagement, and carelessness. These can best be fought with aroused public opinion, stressed education, and information on the value and importance of these vital resources. Each depends on the other; so in order to have one, we must conserve all.

Our community is located on the Blue Ridge Mountains where many natural wildlife habitats still exist but undeveloped environment is shrinking due to increasing population and its needs. Some steps have been taken to preserve wildlife, but there is need for much more.

A complete study of wildlife conservation should be taught in our schools. A wildlife area and a wildlife trail can be had for our elementary schools. With interest and effort on the part of the principal and teachers, young students can acquire a lasting interest in wildlife and the outdoors.

The high school could organize a wildlife conservation club. This would stimulate interest in outdoor life. We are given lessons in driving a car; so, why not teach safe handling of hunting and fishing equipment? We would not only learn more about fish and game, but how to put into practice wildlife conservation. Many projects could be had; such as, raising baby pheasants, or making spawning beds, or whatever is needed most in our community.

A junior watershed association could be formed. Teachers can help by inviting soil conservationists, foresters, wildlife managers, farm experts, engineers and others to meet with their students and help them better understand water, soil, forestry, and wildlife—their dependency on one another. There must be more training in presenting nature and conservation from the outdoor approach.

Our community needs a group of well trained, dedicated people who can get the ball rolling in wildlife care and management. We give ourselves a chance to know others by joining worth-while projects and lose some of our selfishness. Therefore, we begin to think more clearly and freely.

A small watershed association could be formed to benefit my community. With the aid of our local soil conservation district, and higher agencies, the project could be a success. There is no industry, nor sewage, to pollute our streams, but there is always some silt. The latter is one of the most serious pollutants of our fishing waters. Erosion on the entire watershed and stream banks must be satisfactorily controlled to improve fishing. This being done, other wildlife would soon be plentiful since there would be food, cover, and water close together.

Properly constructed and stocked farm ponds can provide excellent fishing.

If every farmer used strip cropping with diversion terraces and grass waterways on hillsides, there would be less soil washed into streams. Another preventive in erosion is improved pastures, grass and legume borders in crop rotation. This practice would draw more insect-eating birds, animals, and beneficial pollinating insects.

Watersheds would provide cleaner water and serve as insurance against floods and droughts. Animals and fish cannot live in drought or flooded areas; but, with water control, proper use and treatment of land, wildlife moves in.

Most of our wildlife crop is grown and harvested on land used for cultivated crops, livestock, and wood products. This means farmers are the key to abundant wildlife. A few farm-

---

A senior at Willis High School in Floyd County, Jack Donnelly has been awarded the $400 Virginia Wildlife Conservation Scholarship for the essay reprinted here. It was his entry in the 14th annual wildlife essay contest sponsored jointly by the Virginia Commission of Game and Inland Fisheries and the Virginia Division of the Izaak Walton League of America.

Commission Photo by Harrison

The author—Harold Jackson "Jack" Donnelly, 17, of Willis, Virginia—was presented with a $400 college scholarship certificate, top prize in the 14th Wildlife Essay Contest, by Governor J. Lindsay Almond, Jr. at contest award ceremonies at the State Capitol last May 12.

ers practice strip cropping in my community. With the aid of the S.C.S., more land operators can apply many soil and water conservation improvements that increase wildlife.

Our local conservationists encourage privately owned ponds. Under their supervision the ponds are properly designed, constructed, and managed. They serve many useful purposes but no finer fishing is obtainable. They can be expected to provide water and cover for small fur-bearing animals, game and song birds. If fenced and planted in grass, legumes, shrubs, and trees, these areas would be perfect homesites for upland game.

A few landowners in my community have placed some of their land in the Conservation Reserve Program and have planted fields in white pines with a good grass cover. This creates an ideal habitat for cottontails and other wildlife.

Some farmers have set out white pine seedlings on odd corners or patches of their farms. More could follow this practice. Tree planting is strongly urged in these areas. With good sod and legumes, a few rows of perennial food producing plants to insure food throughout the year, and a few rows of corn along with scattered grains in stubbled fields nearby—such a spot would serve as a haven for wildlife.

The wire fences are used more where I live. In recent years, landowners have grown wiser by allowing native shrubs to improve these fences for safe routes of travel for wildlife. Sericea lespedeza or sweet clover can be an improved replacement and a real boon to wildlife.

Trees and shrubs planted between fields and in odd areas provide wildlife food and cover.

The S.C.S. can aid farmers in soil surveys. The simplest management for small marshes is prevention of grazing and uncontrolled burning. This protects nature's food for muskrats and waterfowl. Landowners are realizing this is good business.

As for the sportsmen, they must respect the farmers and ask permission to hunt. Not doing so forces them to post their land.

Wildlife habitat is permanent and inexpensive when it is a part of a basic plan for soil and water conservation and sound land use. Our wildlife conservation needs can best be met by the technical knowledge and assistance of soil conservationists and with the landowner's cooperation to carry out his plans. He will soon realize how essential and beneficial wildlife is to his welfare and will be willing to help nature increase the carrying capacity on his farm. At the same time he will be providing a more abundant life for himself and for future generations.

Lessons from the Wildlife Essays

By STUART P. DAVEY
Staff Assistant

FROM among the thousands of papers received each year in the Virginia Wildlife Essay Contest, preliminary screening results in the selection of the finalists of the eight eligible grades. The judges, representing the State Board of Education and the contest's co-sponsors, the Virginia Division of the Izaak Walton League and the State Commission of Game and Inland Fisheries, then select the scholarship, grand prize and other cash award winners.

While reading the essays in the capacity of final judge for the Commission last spring, I was impressed on the one hand by the youthful essay writers' great awareness of natural resource conservation problems and yet, on the other hand, by the great gaps in their understanding of the basic principles of wildlife management.

The widespread acceptance of the need for protecting forests from fire and the desirability of reforestation and management was evident, reflecting the effective campaigning of the Virginia Division of Forestry and the U. S. Forest Service.

Most of the children expressed considerable knowledge of the soil in their communities and how it should be used and protected. Here, years of effort by the U. S. Soil Conservation Service and V. P. I. extension workers have "gotten the story across" to the youth of today—and the adults of tomorrow.

The same conservation consciousness was reflected in most of the remarks on pollution control and watershed development. Excellent progress has been made with young people in these areas.

Their writing on the subjects of wildlife and wildlife management left much to be desired, however. I do not mean that progress has not been made in this field, because it has. There was very much in evidence the knowledge that wildlife is a product of the soil, plants and water found in any community. The children knew that the word "habitat" means the "home" of a given bird, animal or fish and that each species demands certain combinations of food and cover in order to produce young, raise them successfully and then survive through the months of cold and hunger.

The fact that shortcomings in their knowledge remain is dramatically shown by their placing too much faith in the setting up of refuges, preserves and sanctuaries; in the belief that winter feeding makes things all right again after a heavy snow; that restocking desirable species is the answer in game-short areas; that all we need is more game wardens or protection; that hunters and fishermen have caused all the shortages; that our forefathers started all this by being so greedy. These are the statements which worry me, which indicate that modern wildlife management con-

Scholarship winner Donnelly and Governor Almond posed for photographers with grand prize winners on the steps of the State Capitol after contest award ceremonies in Richmond last May. A school athlete and journalist as well as secretary of his local Future Farmers of America chapter, Donnelly plans to attend Ferrum Junior College in Ferrum, Virginia, this September. The eight other youngsters standing behind Donnelly, representing grades 8 through 12, received $50 grand prizes from the Governor. They are: Senior grade, Larry W. Armes, Richlands High School, Tazewell County; 11th grade, Paul Dixon, Warren County High School, Warren County; 10th grade, Patricia E. Allanson, Charles City High School, Charles City County; 9th grade, Allen Hauer, Tuckahoe Junior High School, Henrico County; 8th grade, Patricia A. Clement, Quantico Post High School, Prince William County; 7th grade, Johnny Holmes, Buckingham Elementary School, Buckingham County; 6th grade, Nancy Baird, Ogden School, Roanoke County; 5th grade, Jan Van Horn, Moody Elementary, Clifton Forge. In the back row are the principals of the four schools which recorded the highest percentage of participation in the contest: Flora Belle Williams, Appomattox Elementary School, Appomattox County; N. J. Willis, Gladesboro Elementary School, Carroll County; Roy B. Hill, Marriott High School, King and Queen County; C. M. Saunders, Courtland Elementary School, Southampton County.

Commission Photo by Harrison

cepts are not understood, that reflect the inadequacy of the available printed explanations these children have.

In wildlife management the primary consideration, of course, is the creation or maintenance of an environment (food, cover, water, etc.) in which the bird or animal finds everything it needs to live. This has and always will be the number one goal. Without it, no amount of protection, predator control, refuges, restocking, winter feeding or any other step will make any difference—the desired species still will be absent.

The second realization must be that even with the best habitat, only so many of the desired species can live in the area—*no matter what you do*. You cannot stockpile wildlife. The woods can support only so many deer, grouse and squirrel in the same way that they contain only so many chickadees, woodpeckers and blue jays, for exactly this reason.

The third and most completely misunderstood principle of wildlife management is that the breeding population of any species, game or non-game, on any area tries to fill the world with its kind but cannot do it, because all the forces of nature are against it. It may seem paradoxical, but, on one hand, nature gives the species the drive to survive and, on the other hand, makes sure they can't overdo it. It is here that predator-prey relationships and all the other factors that knock the population down play their roles. It is also in this area of nature's operation that hunters and fishermen enjoy their recreation. The game birds, animals and fish harvested by sportsmen come from this surplus that the species creates. In some species, it is quite true that seasons and bag limits must be strictly enforced to *save the species;* however, in most cases, the seasons and bag limits simply serve to distribute the game equally among the sportsmen. The harvest has no effect whatever on the next year's population of those game species.

If you doubt this, why do you think that the few forms of life that men like to pursue for sport are any different from the rest? Why is the world not more abundantly blessed with bluebirds, robins, wrens, weasels, meadow mice, salamanders or hoot owls?

Other thoughts expressed by the children in their wildlife essays which I rated low were those regarding the "misdeeds" of our pioneer forefathers. This kind of information is evidently easily accessible, but to me this is most unfortunate. No one doubts that the forests were burned, the game hunted and some sod busted. But how many tree farms could you have established 100 years ago? How much corn could be raised in an oak-hickory forest? In the light of present day wildlife knowledge, how much game was actually destroyed? The wilderness species are all that actually became extinct, and you can't preserve wilderness when that's what you've got most of. Many game species became more abundant as a result of man's activities. I believe the children deserve some new insight into just why our forefathers acted as they did. This old attitude actually has branded some modern conservationists as having their heads in the sand—and rightfully so.

In summary, the essays indicate much success in efforts to achieve with youth an understanding of conservation problems and the positive actions that can be undertaken. It is to the credit of the teachers and students that the time has been spent in this kind of study, and it is to the credit of the contest that interest has been aroused and beliefs stated so that progress can be measured.

It is my sincere hope, however, that wildlife managers will take more time to explain to the public their management methods which, according to our wildlife essays, are so poorly understood at present.

* * *

See this magazine's back cover for an announcement listing the subject, prizes, and rules for Virginia's 15th Annual Wildlife Essay Contest. The contest, featuring a $700 college scholarship this year, opens on September 15.

Bird of the Month:

The Ovenbird

By DR. J. J. MURRAY
Lexington, Virginia

IN this year of the centennial of the tragic War between the States it may be of interest to point out that the differences in speech on the two sides of the Mason and Dixon Line apply to at least one bird species. In New England, according to John Burroughs, the ovenbird sings "teacher, teacher, teacher," while in the South the song often seems to have a repeated single note. "teach, teach, teach." But wherever it sings, the song is a ringing joyous crescendo chant, each note or phrase repeated from six to a dozen times. North or South, it is one of the songs which announce with vigor and persistence that a new season has arrived.

There may be cool days or even brief cold spells after the ovenbird heralds the coming of springtime, but he knows and tells to us that the winter is ended and that there is hope for the weary heart.

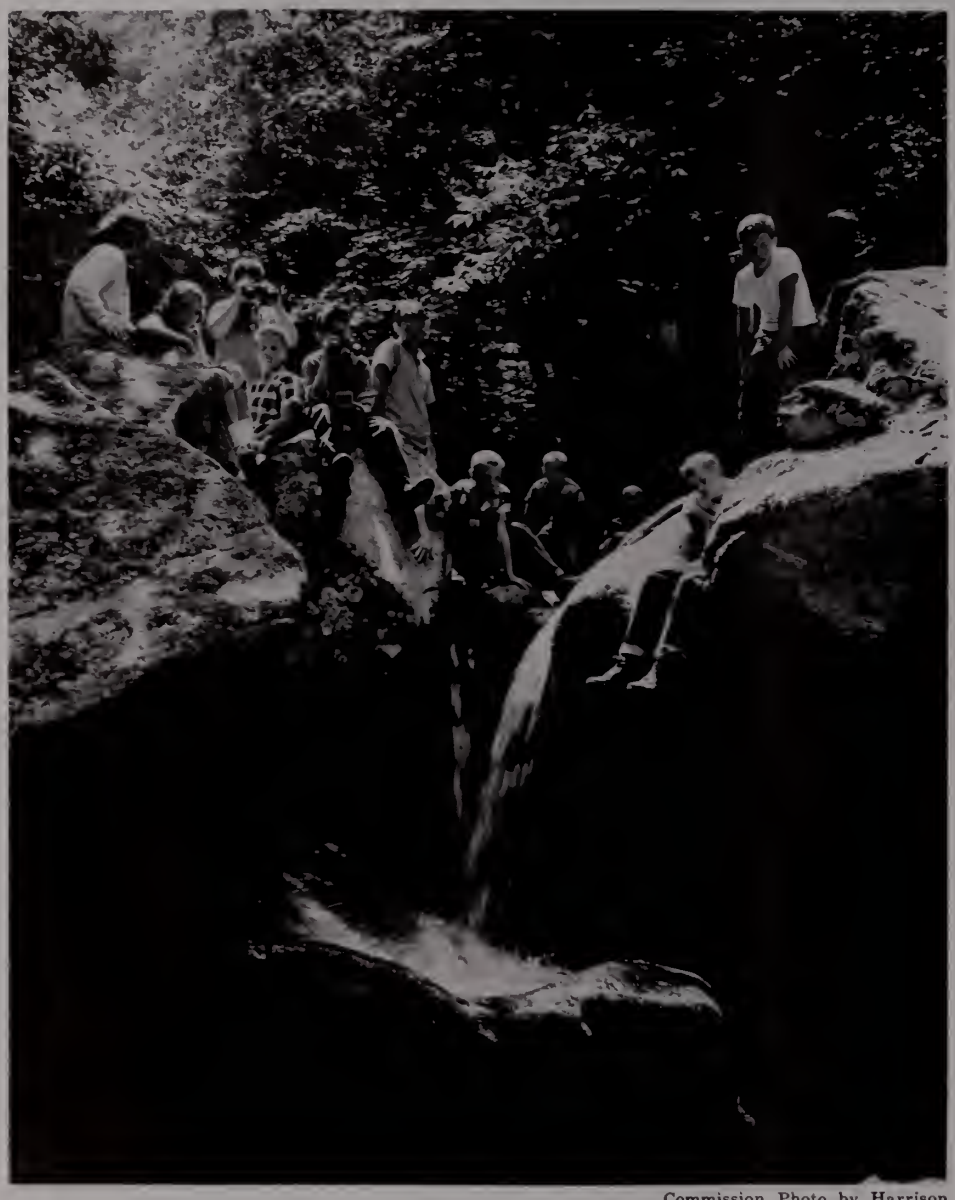
The ovenbird's song, with no variety and with simple pattern, is delivered with such zest and carries so clearly through the woods that he is a successful rival to many a finer songster. The song is usually delivered from a low perch, often even from the ground. If one approaches too closely for the bird's liking, this eager song is sometimes broken by a harsh alarm note, "chip-ip-ip-ip." There is, too, a beautiful flight song which is not often heard.

The ovenbird belongs to the large family of American wood warblers. Duller than most members of this brightly-colored family, larger than most of them, much more quiet in its movements, it is not a typical warbler. With the short, heavy stripes on its breast and its olive-brown back, the ovenbird looks like a little thrush. It has a dull orange crown and a black line over the eye.

Always it is found in the woods, and so commonly that it is a rare piece of woodland in Virginia that does not support its pair. Much of its life is spent on the ground. Here in contrast to most small birds it walks rather than hops as it searches on a mossy bank or among the leaves for its food. The nest is built on the ground, usually where the understory is light and there are open places. Apparently the bird wants a fair degree of light and a measure of dappled sunshine.

Here in a tiny hollow the nest is made of grasses and rootlets and moss, lined with softer grass threads and hair. It is always partially or almost completely covered over. It is this covered nest, like a little Dutch oven, that gives the bird its name. About the only way to find one is by flushing the bird from the eggs. Since she sits very close, this is not easy to do.

Four or five eggs are laid, spotted or speckled like the eggs of so many warblers, with reddish-brown markings. When the young are well grown they fill the little cup. As they hear the mother coming with food they all stick their heads up and open their mouths wide, making the pattern of a lovely rosette. Naturally, many of the young are lost from these ground nests to snakes and other predators. In the North and in our high mountains the red squirrel is one of the chief enemies. Cowbirds, too, are a nuisance, laying their eggs in many ovenbird nests and compelling the poor ovenbirds to become unwitting foster parents.



Commission Photo by Harrison

Field trips at any time make real and vivid those subjects studied in the classroom and from textbooks. Here youngsters at the Virginia Federation of Garden Clubs Nature Camp on the George Washington National Forest near Vesuvius rest at a waterfall on Big Marys Creek.

Father and Son Win Fishing Rodeo

A catch of 36 speckled perch (black crappie) won the father and son prize at the Izaak Walton League Fishing Rodeo sponsored by the Suffolk-Nansemond Chapter in June.

Thomas Hamilton of Holland Cub Pack 12 caught 12 and his father, Joseph T. Hamilton, caught 24.

The Rodeo, held at W. G. Saunders' Five Mile Farm, drew 62 Cubs from the Eastern District Old Dominion Area of the Boy Scouts of America and their families.

A 1-pound, 5-ounce catfish won first prize for Walter Price of Pack 2, Suffolk.

In other age divisions, Billy Edwards, 9, of Pack 3, Smithfield, landed the largest speckle. It weighed eight ounces.

In the age 10 class, Jimmy Heat, Pack 44, Suffolk, caught one weighing seven ounces. Stan Pope of Pack 2, Suffolk, won a prize for the most fish caught.

School Trips in Autumn

Field trips, now or at any time in the school year, make real and vivid those subjects studied in the classroom and from textbooks. On field trips, teachers and youngsters explore and discover together. They employ all five senses: they see, hear, smell, taste and feel. Such learning, by the most natural and enjoyable process, is rapid and sticks with them. Inevitably, a field trip will yield a fund of unforgettable experiences and a wealth of specimens for the classroom or the pupils' own collection.

The vivid hues and blended patterns of our autumn foliage are world-famous. Pressed and dried between the pages of newspapers, autumn leaves hold their colors for years. In the forests there are many wild fruits—plums, crabapples, red haws, elderberries and wild grapes—which may be used in jellies and preserves or eaten raw. There are walnuts, hickory nuts and hazelnuts. Acorns may be used in nature crafts or sprouted and allowed to grow.

In the field and woodlands there are many plants with seeds that have tiny hooks or sharp points and are hitchhikers that cling to the fur of animals and to woolly garments: burdock burs, beggar lice, sticktights and Spanish needles. Take some back to the schoolroom and plant them, or make a labelled collection in cellophane envelopes.

Dozens of projects can be devised from materials collected during such a field trip. A variety of small animal and plant life can be brought back in boxes or jars and enjoyed for weeks or months. Tadpoles, crayfish, snails, aquatic insects and water plants live well in gallon jars. A slab of moss, kept moist in a dish of water, will become a miniature garden.

Large yellow and black garden spiders, in screened boxes, will spin new webs if fed on flies, crickets and grasshoppers. Caterpillars such as the woolly bear, fed on the kinds of leaves they like, can be watched until they spin cocoons which, like those of other large moths, may be saved until next spring when the adults emerge.

James N. Kerrick

Kerrick Named Safety Officer

To conduct gun and boat safety programs throughout Virginia, James N. Kerrick, 41, began work on August 16 as the Game Commission's first safety training officer.

Kerrick retired from the U. S. Air Force on July 31 at the rank of master sergeant after 22 years of service.

Born in Elmira, N. Y. in 1920, Kerrick attended school in Gillett and Troy, Pa. In the Air Force, Sergeant Kerrick worked as a special agent to investigate crimes against the government. More recently, he has been a training officer in the Reserve Mobilization Training Program and a member of the 1960 world-wide championship Office of Special Investigation Pistol Team.

Working out of the Richmond office of the Commission's education division under the supervision of division chief M. R. Cutler, the new safety training officer will administer a statewide firearms safety program in cooperation with the National Rifle Association, promote and coordinate boat safety training programs, and write boat and gun safety articles and bulletins for distribution to boating and sportsman groups.

Cash Prize Total Increased for 15th Wildlife Essay Contest

A total of $2,900 in cash prizes, including a $700 conservation scholarship, will be divided among winners of the 15th Annual Wildlife Essay Contest sponsored by the Virginia Division of the Izaak Walton League and the Virginia Commission of Game and Inland Fisheries.

Because both the Izaak Walton League and the State Commission increased their contributions to the contest, the cash prize total is $500 more than was available for winners of the 1960-61 event. This enabled the organizing committee, which met on July 18 in Richmond, to peg the high school senior scholarship $300 higher than it was for the 14th Annual Contest and also increase the number of $15 prizes from 16 to 24 and up the "school prize" total from $40 to $160. Other prizes, including $50 first prizes and $25 second prizes for each of the eight eligible grades, will remain the same. A total of 233 cash prizes for students, plus awards to schools for participation and quality submitted, will be awarded at the climax of the contest next spring.

Representatives of the League, the Commission and the State Board of Education agreed at their organizational meeting that the dates for the upcoming contest will be September 15, 1961, through January 31, 1962, and that the essay contest subject this time will be "Why Legal Hunting and Fishing are Good Conservation Practices."

Announcements and entry cards have been mailed to school principals, and principals must send these cards to the Game Commission in Richmond to enter their schools in the contest for which some 10,000 individual essays are now written each year.

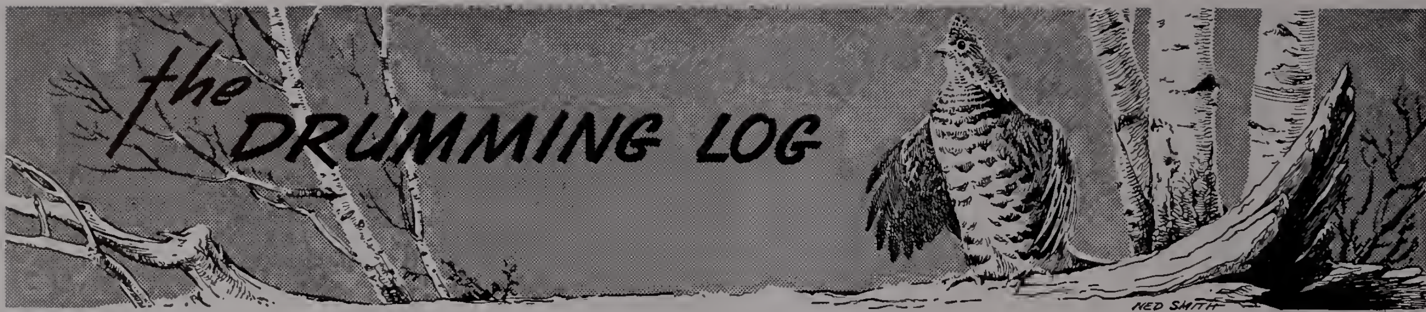
Patrick Henry District Wins Field Force Subscription Drive Contest

The Patrick Henry District field force team, composed of wardens and biologists from the south-central counties, topped five other teams to win the 1960-61 *Virginia Wildlife* field force subscription drive which was concluded on July 6. The winning team, spurred on by team captain I. H. Vassar and paced by warden S. O. Newman of Mecklenburg County who was high man in the State, sold 3,390 subscription years, more than one-third of the statewide field force sales total of 9,991 subscription years.

Second place went to the Thomas Jefferson District team led by team captain V. J. Whitmer and paced by warden J. W. Crickenberger of Orange, number two man in the State in total sales.

Sixty men, including four game division employees, sold at least 75 subscription years each to reach their individual contest quotas.

Recent resignations have meant the loss to the Commission of these three men (from left), staff assistant Stuart P. Davey, game biologist Joe L. Coggin and information officer George H. Harrison. Harrison's hiring by the Pennsylvania Game Commission to edit *Pennsylvania Game News* was announced last month; the announcement of the resignation of Davey and Coggin is on page 13



Importance of Chilling Fish

If fish are kept at an indoors summer temperature, say, 75° F., the number of bacteria will increase at a rapid rate, and the meat will be spoiled in a very short time indeed. Fortunately, however, the rate of multiplication of bacteria can be reduced by cooling. While it takes only half an hour for a young bacterium to grow and divide into two at summer temperatures, the process takes several hours at the temperature of melting ice (32° F.). At 77° F., 500 bacteria grow to the enormous number of several hundred millions in two days. At 32° F. (ice temperature) the same initial number of bacteria require 14 days to become several hundred millions.

For practical purposes the quickest, safest and easiest way to cool fish to about 32° F. and keep them at that temperature is to surround them and mix with them liberal amounts of crushed ice. Simply putting fish without ice into a chill room at 32° F. will cool them down very much more slowly even if the fish are laid out singly. Fish contained in wooden boxes put in a chill room without ice will cool down even more slowly since wood is a good heat insulator. Direct and intimate icing, therefore, because of its superior cooling action ensures that spoilage of the fish during the cooling down period is reduced to a minimum. Once fish have been cooled to 32° F. by icing they can be kept at that temperature only by ensuring that sufficient ice envelops them to absorb heat coming in from their surroundings.

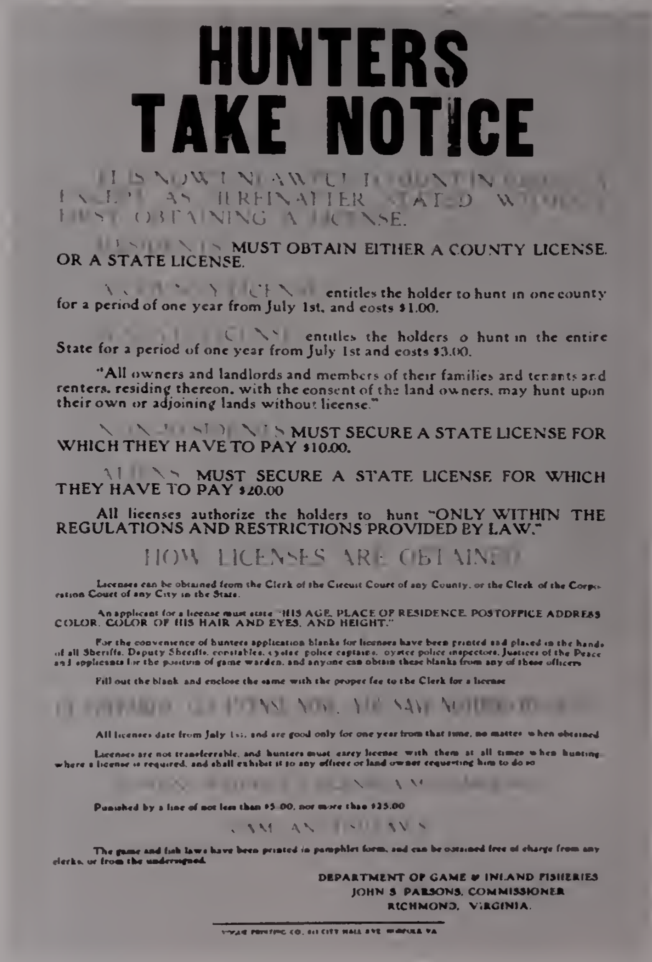
—*Commercial Fishing Review*

With or Without Relish

Some like their clams and oysters raw
And swallow them with unfeigned glee.
Some watch this act with unfeigned awe,
Including me.

—Gladys B. Cutler

Getting ready to shell out for another hunting license, and unhappy about the price? Here's evidence of just how much the cost of a Virginia hunting license has risen in 45 years. The notice reproduced at right was posted in stores and courthouses throughout Virginia in 1916. A license to hunt in your county of residence cost one dollar; today, it costs two dollars. But the cost of a resident license to hunt statewide has risen only from three dollars to three dollars and fifty cents—not much of an increase after all. State Game Warden S. W. Breed, our Goochland County warden, obtained the notice from Durwood Siddons of Sandyhook, whose father, Robert Siddons, was Goochland County's first game warden.



HUNTERS TAKE NOTICE

MUST OBTAIN EITHER A COUNTY LICENSE. OR A STATE LICENSE.

entitles the holder to hunt in one county for a period of one year from July 1st, and costs $1.00.

entitles the holders o hunt in the entire State for a period of one year from July 1st and costs $3.00.

"All owners and landlords and members of their families and tenants and renters, residing thereon, with the consent of the land owners, may hunt upon their own or adjoining lands without license."

MUST SECURE A STATE LICENSE FOR WHICH THEY HAVE TO PAY $10.00.

MUST SECURE A STATE LICENSE FOR WHICH THEY HAVE TO PAY $20.00

All licenses authorize the holders to hunt "ONLY WITHIN THE REGULATIONS AND RESTRICTIONS PROVIDED BY LAW."

HOW LICENSES ARE OBTAINED

Licenses can be obtained from the Clerk of the Circuit Court of any County, or the Clerk of the Corporation Court of any City in the State.

An applicant for a license must state "HIS AGE, PLACE OF RESIDENCE, POSTOFFICE ADDRESS COLOR, COLOR OF HIS HAIR AND EYES, AND HEIGHT."

For the convenience of hunters application blanks for licenses have been printed and placed in the hands of all Sheriffs, Deputy Sheriffs, constables, police captains, oyster police inspectors, Justices of the Peace and applicants for the position of game warden, and anyone can obtain these blanks from any of these officers

Fill out the blank and enclose the same with the proper fee to the Clerk for a license

All licenses date from July 1st, and are good only for one year from that time, no matter when obtained

Licenses are not transferrable, and hunters must carry license with them at all times when hunting where a license is required, and shall exhibit it to any officer or land owner requesting him to do so

Punished by a fine of not less than $5.00, nor more than $25.00

The game and fish laws have been printed in pamphlet form, and can be obtained free of charge from any clerks, or from the undersigned.

DEPARTMENT OF GAME & INLAND FISHERIES
JOHN S. PARSONS, COMMISSIONER
RICHMOND, VIRGINIA.

Reclamation Issues Recreation Guide to Western Reservoirs

Water-sports enthusiasts, fishermen, hunters and other visitors are thronging to reservoirs constructed by the Bureau of Reclamation in the 17 western states at the rate of over 20 million a year, according to a newly issued Bureau folder, the Department of the Interior has announced.

The folder, "Reclamation's Recreational Opportunities," lists the 158 storage reservoirs, or man-made lakes, built by the Bureau of Reclamation in the western states along with their size (ranging from 1 to 1,700 miles of shoreline) and the recreational facilities available at each.

Hunting and fishing areas at the reservoirs are also listed. The folder gives the town or city nearest each reservoir and the name and address of the agency which administers and can furnish additional information about the recreational facilities at each reservoir. Public accommodations at some reservoirs are well developed and include lodging, potable water, picnic areas, boat launching facilities, and rental boats.

The folder also gives similar information on other recreational areas located on Reclamation projects.

Copies of "Reclamation's Recreational Opportunities" may be obtained from any Bureau field office or from the Commissioner of Reclamation, Washington 25, D. C.

Six Boat Ramps Ready, More On the Way

Six boat ramps have been completed and two more started recently by the State Commission of Game and Inland Fisheries.

Boaters may now use the new ramps at Bent Creek on the James River in Appomattox County, Brookneal on the Staunton River in Campbell County, Bentonville on the South Fork of the Shenandoah River in Warren County, Elkton Landing on the South Fork of the Shenandoah River in Rockingham County, Chapman's Landing on the North Fork of the Shenandoah River in Shenandoah County, and at Lake Gordon in Mecklenburg County.

Game Commission officials also announced that, in cooperation with county boards of supervisors in Northumberland and Richmond Counties, a new ramp will be built in each of these counties.

In addition to these, bids have been requested on three more ramps in Fluvanna County, two on the Rivanna River at Palmyra and Crofton Bridge, and the third on Fluvanna Ruritan Lake.

Learn to Pilot Before You Boat

There are literally oceans and oceans of fun awaiting the skilled boatman. But this fun can never be yours unless you first master the basic piloting techniques and rules of courtesy, says E. R. Klamm, accident prevention director of the Allstate Insurance Companies.

Watch your wake. It's a lubberly and hazardous act to set up bow and stern waves near docks, fishing boats and sailing boats, especially in a light breeze. You are usually held liable for damage caused by such carelessness.

Avoid sharp turns at high speed. Not only is the risk of capsizing great, but the sudden change of direction can throw passengers out of the boat.

Some boaters seem to have a few screws loose.

When passing bathing beaches, canoes, or other small boats, always reduce the speed of power driven boats *and keep a sharp lookout.* If anyone is in the water close by, operate at dead slow until you pass him. Spinning propellers can (and, unfortunately, do) kill people.

To pull away from a dock, make sure your stern is clear before giving a left or right rudder. This will save your boat from scrapes and nicks. When mooring, make your approach slowly and preferably into (against) the wind and current.


". . . Yeah, but I get a lot better milage. . ."

Virginia-Maryland Boat Agreement Reviewed

Virginia boat owners using the Potomac River are reminded by the State Game Commission that the following agreement concerning boat numbering will be enforced by both Virginia and Maryland:

1. All Virginia boats used commercially on the Potomac River for more than 90 days in a year shall be registered in accordance with Maryland law.
2. All Virginia pleasure boats over 16 feet shall be registered in accordance with Virginia law.
3. All Virginia small boats or skiffs 16 feet or under and kept on the banks of the Potomac River shall be registered in accordance with Maryland law.
4. All Virginia small boats 16 feet and under kept in the tributaries of the Potomac River shall be registered in accordance with the Virginia law.

The above statements apply to the Virginia side of the Potomac River only.

Boating Safety Classes for Youths Held in Lynchburg

The Lynchburg Junior Chamber of Commerce sponsored classes in boating safety for boys and girls between the ages of 10 and 15 this summer. Waller G. Wells, co-chairman of the project together with T. Ashby Watts, III, reported that the dry land classes were held at the YMCA from June 12 to 16 indoors and that on June 17 the "junior boatmen" met at the Appalachian Power Dam at Reusens for practical application of the skills they learned that week indoors.

State Game Warden P. P. Monaghan, Jr. of Campbell County instructed the youngsters in the provisions of the Virginia Boating Safety Act on June 13.

In addition to instruction on the boat law, the students received information about boats, motors and equipment, first aid and rescue techniques for boatmen, the fundamentals of piloting and navigation, knot tying and safety in water sports.

"You had the whole ocean to drop into."

$2900.00 IN PRIZES...in the 15th

WILDLIFE ESSAY CONTEST

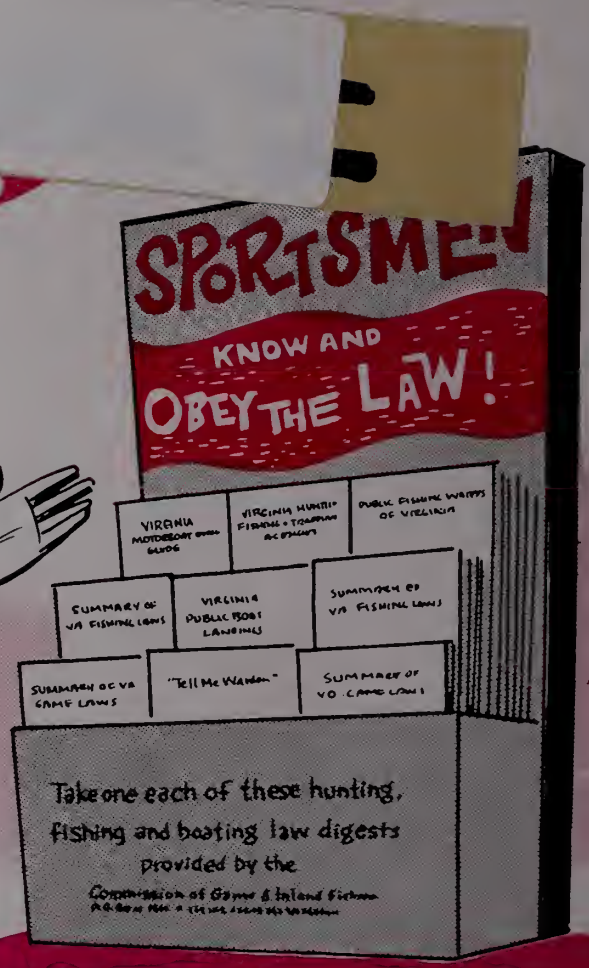
SUBJECT:

Why Legal Hunting & Fi
are Good Conservation Practices

SPONSORED BY: The Virginia Commission of Game and Inland Fisheries and the Virginia Division of the Izaak Walton League of America.

ENDORSED BY: The Virginia Resource-Use Education Council and the Resource-Use Education Committee of the Virginia Academy of Science.

September 15, 1961-January 31, 1962



Kids! ASK YOUR TEACHER TO ENTER YOUR SCHOOL . . . NOW!

A total of **$2,900.00** in cash prizes will be awarded.

1	High School Senior Conservation Scholarship	$ 700.00
8	Grand Prize Awards, $50.00 each, one to each eligible grade, totaling	400.00
8	Second Prizes, $25.00 each, one to each eligible grade, totaling	200.00
24	Third Prizes, $15.00 each, three to each eligible grade, totaling	360.00
24	Honorable Mention Prizes, $10.00 each, divided among eligible grades in proportion to response, totaling	240.00
168	Special Mention Prizes, $5.00 each, divided among eligible grades in proportion to response, totaling	840.00
	School Prizes totaling	160.00
	Grand Prize Total	$2,900.00

The scholarship winner and the eight grand prize winners will come to Richmond as guests of honor of the sponsors and will have their awards presented to them by the Governor. Others will be given their awards in the schools.

RULES:

1. Students from all Virginia schools, grades 5-12 inclusive, are eligible.
2. Essays must be submitted through the schools participating. To be eligible, schools must submit an official entry card. Completed entry cards, when received, will result in contest headquarters' mailing out reference materials.
3. Each essay submitted must indicate in the upper right hand corner name, age, sex, grade, school, teacher, home address, city or county.
4. High school seniors competing for the scholarship must submit a completed scholarship form, obtainable from Contest Headquarters, with their essays.
5. Essays should not exceed 1000 words.
6. Essays will be judged on the basis of originality, effort, grammar, expression, and grasp of the subject. Final judging will be made by a panel of three judges representing the Commission of Game and Inland Fisheries, the Virginia Division of the Izaak Walton League of America, and the Virginia State Department of Education.
7. All essays **MUST** be sent prepaid or delivered to the Commission of Game and Inland Fisheries, Box 1642, Richmond 13, Virginia, and postmarked not later than January 31, 1962. Teachers are urged to send in **ALL** essays.
8. School awards will be made on the basis of response and quality of essays.